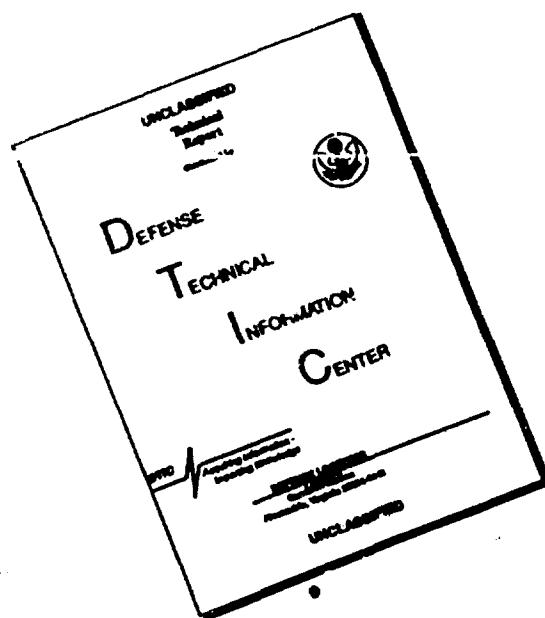


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COVER SHEET

- a. **Responsible Agency:** U.S. Air Force
- b. **Action:** In response to the recommendations of the Defense Secretary's Commission on Base Realignment and Closure, the legislative requirements in the Base Closure and Realignment Act (Public Law 100-526), and to U.S. Air Force plans to enhance mission readiness and national security, Beale Air Force Base (AFB), located near Marysville, California, is planned to be realigned. The 323rd Flying Training Wing now located at Mather AFB (located about 60 miles to the south) would be moved to Beale AFB. Construction of approximately 1.7 million square feet of new facilities and demolition of several existing buildings will be required.
- c. **Contact for Further Information:** HQ SAC/DEVP, Offutt AFB, NE
402/294-3684
- d. **Designation:** Preliminary Final Environmental Impact Statement (PFEIS)
- e. **Abstract:** This statement assesses the potential environmental impacts from realignment of Beale AFB, located near Marysville, California. Realignment will increase on-base activity and require construction of new facilities. Existing air quality may be affected by both construction and operational activities. Operational impacts will not be significant with respect to local and regional air quality because operations will occur within the same air basin as they did at Mather AFB. Biological habitats including vernal pools and other wetlands and riparian habitats may be affected by construction of new facilities; however, no Federal- or State-listed threatened or endangered species are expected to be affected. Realignment will create additional peak period round trips, resulting in impacts on base access, intersections, and parking lots. Portions of the water distribution system and the water treatment facilities will have to be upgraded to meet the increased demand expected as a result of the realignment. If the potential presence of abandoned underground storage tanks in areas planned for construction of new facilities and asbestos-containing materials in buildings planned for demolition or modification is verified, confirmatory studies and appropriate remedial actions will be required. The realignment will have a positive effect on the local and regional economy.

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LIST OF ABBREVIATIONS AND ACRONYMS

AAFES	Army Air Force Exchange Service
ABC	Air Base Group
ACHP	Advisory Council on Historic Preservation
AFB	Air Force Base
AFR	Air Force Regulation
AICUZ	Air Installation Compatible Use Zone
APZ	Accident Potential Zone
ATC	Air Training Command
BACT	Best Available Control Technology
BASH	Bird Air Strike Hazard
BEA	Bureau of Economic Analysis
BIDDS	Base Information Digital Distribution System
BOS	Base Operating Support
CAAQS	California Ambient Air Quality Standards
Cal EDD	California Employment Development Department
Cal DOF	California Department of Finance
CAMS	Consolidated Aircraft Maintenance Complex
CARB	California Air Resources Board
CBPO	Consolidated Base Personnel Office
CCSCE	Center For Continuing Study of the California Economy
CDFG	California Department of Fish and Game
CEQ	Council of Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLUP	Comprehensive Land Use Plan
CO	Carbon Monoxide
COE	U.S. Army Corps of Engineers
COMBS	Contractor Operated/Managed Base Supply
CRWQCB	California Regional Water Quality Control Board

LIST OF ABBREVIATIONS AND ACRONYMS (cont'd)

cy	Cubic Yard
CZ	Clear Zone
dB	Decibel
DOD	Department of Defense
EA	Environmental Assessment
EIFS	Economic Impact Forecast System
EIR	Economic Impact Region
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ERIS	Economic Resource Impact Statement
EWO	Electronics Weapons Officer
FAA	Federal Aviation Administration
FTW	Flying Training Wing
FY	Fiscal Year
gpm	Gallons per minute
HQ SAC	Headquarters Strategic Air Command
HUD	U.S. Department of Housing and Urban Development
IRP	Installation Restoration Program
kV	Kilovolts
L_{dn}	Average Day-Night Sound Level
MES	Management Engineering Squadron
MET	Management Engineering Team
mg/l	Milligrams per Liter
mgd	Million Gallons Per Day
MOA	Military Operating Areas
MSA	Metropolitan Statistical Area
MUTCD	Manual On Uniform Traffic Control Devices
NAAQS	National Ambient Air Quality Standards
NCO	Non-Commissioned Officer
NEPA	National Environmental Policy Act of 1969

LIST OF ABBREVIATIONS AND ACRONYMS (cont'd)

NO ₂	Nitrogen Dioxide
NOI	Notice of Intent
NO _x	Oxides Of Nitrogen
NPDES	National Pollution Discharge Elimination System
NZ	Noise Zones
O ₃	Ozone
PAT	Planning Assistance Team
PAVE PAWS	Precision Acquisition Vehicle Entry Phased Array Warning System
PCB	Polychlorinated Biphenyls
PM ₁₀	10-Micron or Less Particulate Matter
ROD	Record of Decision
SAC	Strategic Air Command
SACOG	Sacramento Area Council of Governments
SARA	Superfund Amendments and Reauthorization Act
SCS	Soil Conservation Service
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SID	Standard Instrument Departures
SO ₂	Sulfur Dioxide
SRW	Strategic Reconnaissance Wing
STP	Sewage Treatment Plant
SV	Services Squadron
SUNT	Specialized Undergraduate Navigation Training
TCE	Trichloroethylene
TDS	Total Dissolved Solids
ug/m ³	Micrograms per Cubic Meter
USAF	United States Air Force
USDA	United States Department of Agriculture
UST	Underground Storage Tank

EXECUTIVE SUMMARY

The action evaluated in this Environmental Impact Statement (EIS) is the realignment of Beale Air Force Base (AFB), California. The realignment is the result of the recommendations of the Defense Secretary's Commission on Base Realignment and Closure, legislative requirements in the Base Closure and Realignment Act, and U.S. Air Force (USAF) plans to enhance mission readiness and national security. The realignment involves the relocation of the 323rd Flying Training Wing--the Specialized Undergraduate Navigation Training (SUNT)--currently operating out of Mather AFB near Sacramento, California, to nearby Beale AFB. The SUNT includes 14 T-43 and 25 T-37 aircraft, 486 military personnel, 307 full-time civilians, and a daily average of 773 students. Additionally, a few tenant organizations with small numbers of personnel currently located at Mather AFB will relocate to Beale AFB as part of the realignment.

The Commission determined that this realignment will be facilitated by an unrelated and previously programmed force structure action to deactivate the SR-71 program at Beale AFB. The deactivation of the SR-71 program has been the subject of a separate National Environmental Policy Act (NEPA) document; however, the cumulative assessment of the force structure change is addressed in this EIS.

Beale AFB will experience construction of approximately 1.7 million square feet of floor area in various types of new facilities over the next 3 years to accommodate the realignment. In addition, several existing buildings will be demolished and/or renovated. Flight operations at Beale AFB will increase by approximately 34 percent as the 323rd Flying Training Wing (FTW) activity is added to existing operations.

Provisions of the Base Closure and Realignment Act preclude the examination of any alternative actions to realignment, but allow for the examination of alternative methods of implementing the realignment. Because the act requires implementation of the realignment to occur at Beale AFB, the "no action" alternative, as well as the alternative to relocate the SUNT to a base other than Beale AFB, has not been evaluated.

The following areas of environmental concern were identified during the scoping process: geology and topography; air quality; water resources; biological resources; archaeology; noise; land use; transportation; utilities; waste management; and socioeconomics. For these areas of concern, potential environmental consequences associated with realignment are described and, as applicable, mitigation measures are recommended.

Geology and Topography. Potential geologic and topographic impacts could include earthquake-induced strong groundmotion, liquefaction, settlement or expansion of soils, erosion, and construction-induced terrain modification. Potential mitigation measures to reduce impacts to insignificant levels include the design and construction of facilities to withstand strong groundmotion and site-specific geotechnical investigations. Measures proposed include dissipation and direction of runoff,

revegetation of disturbed areas, limitation of grading activities, and balancing of cut and fill volumes.

Air Quality. Existing air quality may be affected by both construction and operational activities. Construction impacts are anticipated to be short-term and localized, whereas operational activities will be long-term. Construction emissions will primarily be associated with exhaust and dust generated by heavy equipment. These short-term impacts will be minimized by the proposed suppressing of dust during high wind conditions. Additionally, potential measures including minimizing overlap of activities and subsequent overlap in peak short-term emissions; installation of vapor recovery systems on gasoline-powered construction equipment; curtailment of activity during periods of high ozone conditions; paving high-use haul routes; and covering stockpiles may be taken.

Operation emissions will be generated from aircraft emissions; aircraft refueling; aircraft maintenance; motor vehicles; building maintenance; and automotive refueling. However, it is anticipated that impacts resulting from SUNT operations will not be significant with respect to regional air quality, because SUNT operations will occur within the same air basin as they did at Mather AFB; therefore, they do not represent a new source of air emissions into the air basin. Local air quality at Beale AFB will be impacted by increased emissions. Potential mitigation measures to reduce operational air emissions include encouragement of car and van pooling and bus transportation, and use of state-of-the-art natural gas boilers at new facilities.

Water Resources. Surface water quality on base is not anticipated to be adversely affected by the realignment. Likewise, increased water demand as a result of the realignment is not expected to significantly affect existing water table levels, alter the direction of groundwater flow, or affect other groundwater users in the area. Flooding and/or erosion impacts could occur, although their potential is considered very low. To reduce the potential for flooding and erosion impacts, it is proposed that site grading activities be minimized during the rainy months and that all site preparation activities incorporate best available storm water management practices.

Biological Resources. Although the realignment will primarily disturb introduced annual grassland, other habitats, including vernal pools and other wetlands and riparian habitats, may be affected. Consultation with the U.S. Army Corps of Engineers (COE) will be undertaken in regards to their wetlands permit authority. Proposed mitigation measures to lessen potential impacts will include minimizing the areas to be graded; exclusion of construction-related activity from sensitive wetland and riparian habitat areas; protection of wetlands with silt curtain/fence material; landscaping to reestablish vegetation in disturbed areas with use of native species; and a vernal pool management area to establish replacement habitat for similar lost habitat. No Federal- or State-listed threatened or endangered species are expected to be affected by the realignment.

Archaeological, Cultural, and Historical Resources. No standing historic structures or sites of specific ethnographic or heritage concerns have been identified on Beale AFB. Construction activities will primarily occur in areas with little potential archaeological sensitivity. Mitigation of potential impacts is proposed by initiating and/or completing surveys of project areas and consultation with the State Historic

Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP).

Noise. Noise levels will increase very slightly over existing levels after the SUNT begins operating at Beale AFB. An increase of approximately 2 percent in land area (750 acres) exposed to noise levels in excess of an average day-night sound level (L_{dn}) of 65 is projected. It is proposed that night flight activity be minimized to the extent practical.

Land Uses. Existing land uses in the vicinity of Beale AFB will not be significantly impacted by the realignment. Although an approximate 750-acre expansion of the 65 L_{dn} contour is projected to occur as a result of additional flight activity, this additional acreage predominantly consists of agricultural uses. As a result, no mitigation measures are proposed.

Transportation. The realignment will create additional peak period round trips to and from the base, resulting in impacts on base access, intersections, and parking lots. An additional 671 additional trips are expected during weekday peak periods. A number of specific improvements to the on-base road system, parking lots, and gates, as well as encouragement of alternatives to single-occupant automobile trips, are potential measures to mitigate impacts to transportation.

Utilities. Increases in electricity and water demand, and communication needs will occur as a result of the addition of the SUNT to Beale AFB. However, the increase in electricity demand is not expected to present a significant impact because there are ample power supply and distribution systems on base. Water capacity on base is adequate to meet projected demands associated with increased base personnel. However, portions of the water distribution system will have to be upgraded in order to adequately provide water to two portions of the base. Impacts to water distribution are proposed to be mitigated by installing a second supply line to the flightline area and additional pumps to the housing area. A potential mitigation measure for the treatment system is the addition of facilities to reduce high mineral levels. No impact to on-base communication systems is anticipated.

Waste Management. Waste management issues were evaluated regarding potential impacts to solid waste disposal, wastewater disposal, hazardous waste generation and disposal, underground storage tanks (USTs), and asbestos. Solid waste and wastewater disposal are not anticipated to present significant impacts to existing landfill and sewage treatment facilities. Wastewater discharged may continue to exceed permitted cyanide levels. Potentially, the wastewater system may be improved by additional backup lift pumps at one location, by using a storm water management program, and one of three alternatives to reduce cyanide levels in inflow (either use of a pretreatment unit for the plating shop outflow, contracting all plating to off-base businesses, or performing all plating at McClelland AFB). Hazardous waste generation will be limited to small amounts associated with the operation and maintenance of SUNT aircraft and are not anticipated to present significant impacts related to storage and disposal. Several abandoned USTs may exist in areas where SUNT facilities will be built. Portions of these areas have been surveyed to determine potential UST locations; however, results have not been confirmed by excavation. In areas where the

potential for USTs exist, it is proposed that additional geophysical surveys and excavations be conducted to confirm their presence and location. Several of the buildings slated for demolition or modification may contain asbestos in various forms. To confirm the presence of asbestos, it is proposed that detailed surveys be conducted prior to demolition or modification. If asbestos is confirmed, appropriate remedial actions will be implemented.

Socioeconomics. The realignment of Beale AFB will bring additional people and revenue to the region around the base. The local economy will receive most of the estimated \$72 million per year in increased base operating expenditures. The regional impact of this spending is projected to be about \$97 million per year. Of this, about \$48 million per year would accrue to regional households as personal income. Local government revenues and expenditures are also projected to increase. These beneficial economic impacts are small in the regional context.

The number of personnel and their dependents moving to Beale AFB is expected to be 3,435. Induced population growth would bring the total addition to local population to 4,100 persons. Construction activity will create short-term employment for up to 800 workers, and indirect regional employment--attributable to construction of realignment facilities--will amount to about 3,465 person-years during FY 91 through FY 93. Long-term employment gains supported by realignment will average 2,200 jobs. These population and employment impacts do not significantly affect current regional trends and are generally beneficial.

The 829 permanent party personnel are expected to relocate to the area around Beale AFB. An adequate housing supply exists to accommodate these households. Additionally, 450 to 475 school-age children of SUNT personnel are expected to enter area schools after the realignment. Nearly all of these children are expected to attend Wheatland schools, which currently have substantial excess capacity. Education impact assistance to schools is projected to increase by between \$652,600 and \$688,850 per year. The sufficient capacity and additional impact assistance renders the impact of the realignment on schools insignificant. Impacts to other types of community services are not expected to be significant.

1.0 DESCRIPTION OF AND NEED FOR THE REALIGNMENT ACTION

1.1 INTRODUCTION

The Defense Secretary's Commission on Base Realignment and Closure (Commission) was chartered on May 3, 1988, by the Secretary of Defense to recommend realignment and closure of military installations within the United States, its commonwealths, territories, and possessions. Subsequently, the Base Closure and Realignment Act (Public Law 100-526, October 24, 1988) endorsed the Secretary's Commission and required the Secretary of Defense to implement its recommendations unless he rejected them in their entirety or the Congress passed (and the President signed) a Joint Resolution disapproving the Commission's recommendations.

The primary criterion used by the Commission for identifying candidate bases was the military value of the installation. However, cost savings were also considered, as were the current and projected plans and requirements for each military service. Last, the Commission focused its review on military properties and their uses, not military units or organizational/administrative issues.

On December 29, 1988, the Commission recommended the realignment and closure of 145 military installations. Of this number, 86 are to be completely closed, 5 are to be closed in part, and 54 will experience a change (either an increase or decrease in units and activities) as units and activities are relocated.

On January 8, 1989, the Secretary of Defense approved those recommendations and announced that the Department of Defense (DOD) would implement them. The Congress did not pass a Joint Resolution disapproving the recommendations within the time allotted by the Base Closure and Realignment Act.

Therefore, the Act now requires the Secretary of Defense, as a matter of law, to implement those closures and realignments. Implementation must be initiated by September 30, 1991, and must be completed no later than September 30, 1995. Thus, the decision has been made to realign Beale Air Force Base (AFB), California.

The realignment involves the relocation of the 323rd Flying Training Wing (FTW)--the Specialized Undergraduate Navigation Training (SUNT)--currently operating out of Mather AFB near Sacramento, California, to nearby Beale AFB. The SUNT includes 14 T-43 and 25 T-37 aircraft, 486 military personnel, and 307 full-time civilians. Approximately 1,100 students enter SUNT each year with approximately 950 graduating annually. An average of 773 students are involved with SUNT-related activities on a daily basis. The withdrawal of the SUNT and the closure of Mather AFB is the subject of a separate National Environmental Policy Act of 1969 (NEPA) document.

It was determined by the Commission that this realignment will take advantage of an unrelated and previously programmed force structure action to deactivate the SR-71 program at Beale AFB and improve multiservice training by using existing facilities at Beale and consolidating similar activities. The unrelated and previously

planned deactivation of the SR-71 program has been the subject of a separate NEPA document; however, the cumulative assessment of the force structure change is addressed in this Environmental Impact Statement (EIS).

The Base Closure and Realignment Act requires the implementing actions to conform to the provisions of NEPA, as implemented by the President's Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508). In addition, this EIS also follows Air Force regulations (AFR) 19-2, which incorporate both NEPA and the CEQ regulations within the Air Force system. However, the Base Closure and Realignment Act also modifies NEPA to the extent that the environmental analysis need not consider:

- The need for closing or realigning a military installation selected for closure or realignment by the Commission.
- The need for transferring functions to another military installation that has been selected as the receiving installation.
- Alternative military installations to those selected.

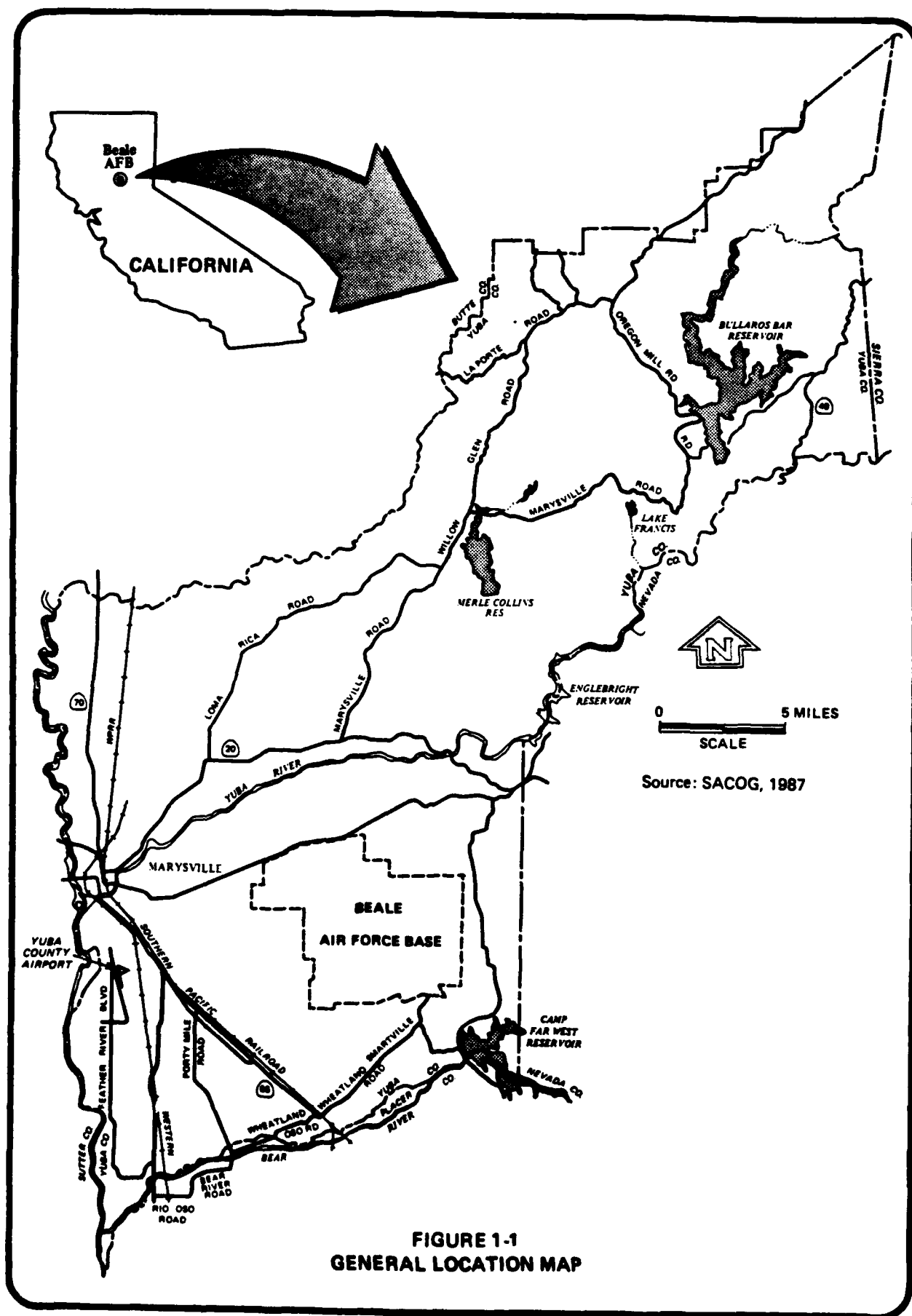
1.2 LOCATION OF BEALE AFB

Beale AFB currently consists of 22,944 acres of government-owned land in Yuba County, approximately 40 miles north of the city of Sacramento and 13 miles east of Marysville, in north-central California (Figure 1-1). The foothills of the Sierra Nevada mountains border the eastern edge of the base. Large water sources that border the base include the Yuba River to the north, the Bear River to the south, and Camp Far West Reservoir to the southeast. Other neighboring cities are Yuba City, 16 miles west; Oroville, 40 miles north; and Grass Valley, 25 miles east.

1.3 SCOPING SUMMARY AND PREPLANNING ANALYSIS

The United States Air Force (USAF) published a Notice of Intent (NOI) in the Federal Register on February 8, 1989, to prepare an EIS for the realignment of Beale AFB. In accordance with the information presented in the NOI, the USAF held a public scoping meeting on February 15, 1989, at the Marysville Chamber of Commerce building. The purpose of this public meeting was to obtain input from the general public and Federal, State, and local agency personnel to assist the USAF in determining the nature, extent, and scope of significant issues related to the realignment action.

The public scoping meeting was attended by approximately 34 persons, including various military personnel, the local news media (four local television stations, a local radio station, and a local newspaper), and a few local citizens. No written or oral comments or concerns were presented by anyone in attendance. However, the general public and agency officials were allowed until March 15, 1989, as stated in the NOI, to submit written comments on issues to be addressed in the EIS.



The USAF received four letters from various State and Federal agencies expressing issues and concerns about the realignment action. Based on the information presented in these letters, significant issues that relate to the realignment action include the following:

- Potential impacts to wetland and vernal pool areas.
- Increased demand on existing wastewater treatment plant capacities.
- Potential impact to known areas of past contamination on base and to current or increased hazardous waste generation, use, and disposal management.
- Potential impacts to air quality.
- Potential increases in noise.
- Potential impacts to surface water quality.
- Potential impacts to protected plant and/or animal species.
- Potential impacts to migratory deer herds.
- Potential impacts to salmon spawning areas in Dry Creek/Best Slough.

It should be noted that, at the time the scoping process was being conducted, the USAF was proposing that a new parallel runway adjacent to the existing runway at Beale AFB be constructed as part of the realignment action. Subsequent to the public scoping process, the Air Force Council disapproved the construction of this second runway. Therefore, Federal and State agency concerns expressed in their letters that address potential impacts related to construction of an additional runway as part of the realignment action are no longer relevant. However, a Parasail area for parachute training, consisting of a 3,000 foot diameter circular road crossed by several paved intersecting roadways has been added to the realignment action since the completion of the scoping process. Concerns related to the additional runway pertaining to potential impacts on biological resources are generally applicable to this training facility.

The results of the scoping process have identified several issues to be addressed as part of the environmental impact analysis. In addition to those issues identified by State and Federal agencies, the following issues will be addressed in this EIS: geologic environment; water supply; zoning and political boundaries; archaeological, cultural, and historic resources; transportation; utilities and waste management; and socioeconomic issues including employment, household income, housing, education, and community service facilities.

**1.4 RELEVANT FEDERAL, STATE, AND LOCAL STATUTES, REGULATIONS,
AND GUIDELINES**

A summary of governmental actions including laws, regulations, executive orders (EO), and other types of actions imposing requirements relevant to the SUNT realignment action is presented in Table 1-1.

TABLE 1-1
**Summary of Relevant Federal, State, and Local Statutes,
Regulations, and Guidelines**

<u>Statutes and Executive Orders</u>	<u>Implementing Regulations</u>	<u>Description</u>
I. Air Clean Air Act	40 CFR 50-52 California Health & Safety Code, Division 26	<p>Provides the framework for air pollution control. Local air pollution control agencies enforce prohibitory rules and conduct new source review for permits. The Act requires states to develop state implementation plans so that nonattainment areas can meet national ambient air quality standards. Ambient air quality standards for several pollutants found in the atmosphere are established. Ambient standards allow classification of regional air quality for six criteria pollutants.</p>
Yuba County Air Pollution Control District	Rules & Regulations Regulation IV	<p>Provides standards under which Authority to Construct and Permits to Operate can be issued. New stationary sources must comply with requirements of Best Available Control Technology (BACT) if emission thresholds are to be exceeded.</p>
Yuba County Air Pollution Control District	Rules & Regulations Regulation III	<p>Provides prohibitory rules for stationary sources. Specific rules cover dust and fume generation, gasoline loading operations, architectural coatings, and solvent degreasing.</p>

TABLE 1-1 (cont'd)

<u>Statutes and Executive Orders</u>	<u>Implementing Regulations</u>	<u>Description</u>
<p>2. Biological Resources</p> <p>EO11990, Protection of Wetlands</p>		<p>Establishes a Federal policy to protect Federally-owned or -controlled wetlands by requiring that all Federal agencies avoid "undertaking or providing assistance for new construction located in wetlands."</p>
<p>Endangered Species Act of 1973 (Public Law 93-205)</p>	50 CFR 10-14, 17, and 81	<p>Identifies and protects species threatened or in danger of extinction. As part of this effort, the habitat of threatened or endangered species are protected. Harm to a listed species or its habitat, known as a taking, is forbidden. It is possible for the administering agency, the U.S. Fish and Wildlife Service, to allow a limited taking in instances of extreme economic hardship.</p>
<p>3. Cultural Resources</p> <p>National Historic Preservation Act (Public Law 89-665)</p>	36 CFR 800-805	<p>Requires that prior to Federal action, account is taken of the effects of the action on properties included in or eligible for the National Register of Historic Places. Measures to minimize harm to any National Historic Landmark that may be affected by the action are mandated. State and local governments, private individuals, Native American organizations, and the Advisory Council on Historic Preservation (ACHP) may become involved as consulting parties in the implementation of the Act.</p>

TABLE 1-1 (cont'd)

<u>Statutes and Executive Orders</u>	<u>Implementing Regulations</u>	<u>Description</u>
Archaeological Resources Protection Act (Public Law 96-95)	36 CFR 296	Regulates archaeological work on Federal lands with the goal of preventing unauthorized disturbance of archaeological resources. Permits can be obtained to conduct such work.
4. Environmental Policy National Environmental Policy Act (NEPA, Public Law No. 91-190).	40 CFR 1500-1508 Air Force Regulations 19-2	NEPA procedures ensure that environmental information is available to public officials and citizens before decisions are made and actions taken on Federally-funded projects. The NEPA process, which can include preparation of an Environmental Assessment or Environmental Impact Statement, is intended to help public officials make decisions that are based on an understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.
EO11514, Protection and Enhancement of Environmental Quality, as amended by EO11991		These EOs are the President's statement accepting the policy set out in NEPA and giving direction to Federal agencies and the Council on Environmental Quality for their responsibilities in carrying out this policy.
5. Land Use EO12372, Intergovernmental Review of Federal Programs		Directs that "Federal agencies shall provide opportunities for consultation" by state and local government officials on Federal projects.

TABLE 1-1 (cont'd)

<u>Statutes and Executive Orders</u>	<u>Implementing Regulations</u>	<u>Description</u>
Air Installation Compatible Use Zone (AICUZ) Program	Air Force Regulations 19-3	This Air Force program provides guidance to local governments in developing land use policies. A document is prepared for each installation describing noise conditions and safety zones on and near the installation. The Air Force has no authority to impose land use restrictions on local agencies or landowners.
California Airport Land Use Commission Law	Article 3-5 California Public Utility Code	Directs local governments to establish Airport Land Use Commissions to develop Comprehensive Land Use Plans (CLUP) for each airport or military air installation. This program is designed to ensure the orderly expansion of airports and airfields and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards. Local governments use the CLUP, which incorporates information from the AICUZ program, to make decisions under their zoning authority.
6. Public Health and Safety Resource Conservation and Recovery Act of 1976 (RCRA, Public Law 94-580)	40 CFR 240-280	Establishes Federal programs governing solid and hazardous waste. For solid waste, disposal requirements to end open dumping practices and protect water supplies are promulgated. Extensive regulation of hazardous waste handling, transportation, and disposal covers all hazardous waste activities from the point of generation through transportation to final disposition, which includes recycling, destruction, or disposal. An additional program under RCRA regulates underground storage tanks.

TABLE 1-1 (cont'd)

Statutes and Executive Orders	Implementing Regulations	Description
EO12088, Federal Compliance with Pollution Control Standards		States that all executive agencies (such as the Department of Defense) must comply with all applicable pollution control standards. Heads of agencies are responsible for ensuring that "all necessary actions are taken for the prevention, control, and abatement" of pollution and are required to submit annual pollution control plans.
7. Water Safe Drinking Water Act (Public Law 93-523 and 96-339)	40 CFR 141-149	Protects the quality of water supplied by public drinking water systems (over a minimum size). Maximum Contaminant Levels (MCL) have been established for many contaminants which may not be exceeded in public drinking water supplies. Maximum Contaminant Level Goals (MCLG) are non-binding guidelines for contaminants in such supplies. Establishes programs to protect underground drinking water sources from contamination.
Federal Water Pollution Control Act (Public Law 92-500) and Clean Water Act (Public Law 97-117 and 100-4)	40 CFR 100-140 and 400-471 and 33 CFR 320-330	Require that discharges to surface waters be permitted and controlled under the National Pollution Discharge Elimination System (NPDES). Minimum national standards for numerous pollutants and testing requirements are established. In California, the NPDES is administered by each Regional Water Quality Control Board. Wastewater discharged to publicly-owned treatment works may be subjected to pretreatment requirements. Section 404 (Clean Water Act) gives the U.S. Army Corps of Engineers authority to control development in waterways including wetlands.

TABLE 1-1 (cont'd)

<u>Statutes and Executive Orders</u>	<u>Implementing Regulations</u>	<u>Description</u>
California Porter-Cologne Water Quality Act of 1969	California Regulations Title 23 Chapter 3 Section 2050-2836	Establishes the California Regional Water Quality Control Boards (CRWQCB), which are charged with attaining "the highest water quality which is reasonable." These boards have authority to develop and implement regional water quality control plans by regulation of water issues and waste discharge.
California Safe Drinking Water and Toxic Enforcement Act of 1986	California Regulations Title 23 Chapter 3 Section 2050-2836	Establishes a blanket prohibition on "contaminating drinking water with chemicals known to cause cancer or reproductive toxicity." A list of such chemicals is required to be published by the Governor.

2.0 ALTERNATIVES INCLUDING THE REALIGNMENT ACTION

2.1 INTRODUCTION

The Base Closure and Realignment Act (Public Law 100-526, 24 October 1988) requires the Secretary of Defense, as a matter of law, to implement the realignment of Beale AFB to include the SUNT mission. The Act requires the implementing actions to conform to the provisions of NEPA. However, the Act also precludes the examination of any alternative actions to realignment. Consequently, this document will only examine alternate methods of carrying out the realignment. Because the Act requires implementation of the realignment, "no action" is not an alternative and is not specifically included. However, Chapter 3 presents the environmental conditions associated with the installation and its operations, which will serve as the baseline against which the implementation impacts are judged.

2.2 DETAILED DESCRIPTION OF THE REALIGNMENT ACTION

2.2.1 Realignment Action

The realignment action involves the addition of the SUNT, currently located at Mather AFB, to Beale AFB. The SUNT consists of six navigator training squadrons and one aircraft maintenance squadron. Approximately 1,100 students (Air Force, Navy, Marine, and foreign national) enter the SUNT each year with approximately 950 graduating annually. The average daily student load is approximately 773 persons. In addition to these students, there are also 486 full-time military personnel and 307 full-time civilians associated with SUNT operations, including administrative staff, faculty, aircraft operations and maintenance personnel, and staff of tenant units. Estimates of the numbers of full-time personnel expected to relocate to Beale AFB as a result of the realignment are presented in Table 2-1. In addition to the SUNT personnel, 33 military personnel and 3 civilians under various commands are expected to relocate. No reserve personnel will be affected by the realignment.

Since the Strategic Air Command (SAC) is the host command at Beale AFB, Base Operating Support (BOS) personnel included in the realignment will be reassigned from the Air Training Command (ATC) to SAC. It is estimated that approximately 230 positions of the 829 permanent party expected to relocate will be reassigned, including approximately 90 medical personnel. These 230 positions are expected to bring support units up to required strength to accommodate the addition of the SUNT.

SUNT operations at Beale AFB are expected to become fully operational by the fourth quarter of fiscal year (FY) 1993. Once operational, a complete SUNT in-session training course would last approximately 170 work days per year. Although this represents a 34-week (or an approximate 9-month) period, in-session training courses are continuously scheduled throughout the calendar year; thus, SUNT activities would occur at Beale AFB year round.

TABLE 2-1

Estimates of Full-Time Personnel Affected by Realignment

<u>Unit</u>	<u>Officers</u>	<u>Enlisted</u>	<u>Civilians</u>	<u>Total</u>
323rd FTW (includes the 450th, 451st, 452nd, 453rd, 454th, and 455th Flying Squadrons)	324	31	6	361
Department Operations Staff	49	26	56	131
Wing Headquarters	5	8	7	20
Physiological Training Unit	4	22	0	26
3314th Management Engineering Squadron (MES) Headquarters	1	4	0	5
Wing Commander	7	5	3	15
Aircraft Maintenance, Contractor	<u>0</u>	<u>0</u>	<u>235</u>	<u>235</u>
TOTAL, SUNT personnel	390	96	307	793
Tenant Units ¹	<u>12</u>	<u>21</u>	<u>3</u>	<u>36</u>
TOTAL, Permanent Party	402	117	310	829
Students (average daily load)	<u>723</u>	<u>50</u> ²	<u>0</u>	<u>773</u>
TOTAL, Realignment	1,125	167	310	1,602

Source: Personal Communication, Captain Byron Wall, Mather AFB; February 1990.

Notes: ¹Tenants include Air Force Communications Command, Air Force Commissary Service, Office of Special Investigations, Military Airlift Command, Air Force Legal Services Center, Air Force Audit Agency, Military Personnel Center, Air Force Logistics Command, and Electronics Security Command.

²Approximately 50 Marine students are considered enlisted. All other students are officers.

~~Flying operations related to SUNT would use Beale AFB for runway, hangar, maintenance, and repair facilities.~~ However, air space necessary for flight training exercises would occupy essentially the same air space these exercises currently occupy operating out of Mather AFB. The T-43 aircraft will continue to use the established low-level training routes--designated IR-207, IR-275, and IR-400. The T-37 aircraft will be assigned new Standard Instrument Departures (SIDs) by the Federal Aviation Administration (FAA). SIDs provide standard routes for the transition of an operation between departure and the enroute phase. Military Operating Areas (MOAs), specific airspace units designated for military training operations, used by the T-37 will not be changed (Personal Communication, Ms. Mary Peters, HQ SAC, February 1990).

Current flying operations at Mather AFB for the T-43 average 2,673 sorties annually. Operations for the T-37 at Mather AFB average 8,262 sorties annually. These two types of aircraft average 82,800 runway operations each year--20,206 for the T-43 and 62,604 for the T-37. An operation consists of one takeoff, one landing, one low approach, or one departure (as in a touch and go), while a sortie is a complete mission flown by one aircraft that may include a number of operations. For these two types of aircraft, as they are currently operating at Mather AFB, there is an average of 7.5 operations during each sortie (Personal Communication, Captain Byron Wall, Mather AFB, February 1990).

The T-37 aircraft operated by the SUNT program is a two-seat jet trainer designed as such for the Air Force. Manufactured by Cessna, the T-37 has a wing span of over 33 feet, a length of approximately 29 feet, and an overall height of approximately 9 feet. The maximum level speed of a T-37 is 370 knots or 426 miles per hour (mph) and its maximum range is 819 nautical miles or 943 miles. Production of the T-37 ceased in 1977 (Jane's, 1977-78).

The SUNT also operates T-43 aircraft that were manufactured by Boeing as their model number 737-200. These craft, designed as commercial transports, were modified for the Air Force as navigator trainers. ~~Each craft accommodates up to 12 student navigators, four navigator proficiency students and three instructors.~~ These craft have a wing span of 93 feet, a length of 100 feet, and an overall height of 37 feet. The maximum level speed of the T-43 is 509 knots or 586 mph and its maximum range is 2,200 nautical miles or 2,530 miles. Boeing ceased production of the 737-200 in 1988 (Jane's, 1979-80 and 1989-90).

A force structure action was programmed at Beale AFB prior to the realignment action. This action was the deactivation of SR-71 flying operations and related support functions, which affected 586 military personnel and 38 civilian personnel (HQ SAC, January 1990).

The realignment action and the force structure change will result in changes in the units operating at Beale AFB. The existing units, as of February 8, 1990, are presented below. Units associated with the realignment are presented in Table 3-1.

The 14th Air Division includes:

- **The 9th Strategic Reconnaissance Wing (SRW) includes:**
The 5th Strategic Reconnaissance Training Squadron.
The 99th Strategic Reconnaissance Squadron.
The 349th Air Refueling Squadron.
The 350th Air Refueling Squadron.
The 9th Avionics Maintenance Squadron.
The 9th Field Maintenance Squadron.
The 9th Organizational Maintenance Squadron.
The 609th Organizational Maintenance Squadron.
The 9th Reconnaissance Technical Squadron.
- **The 814th Combat Support Group includes:**
The 814th Civil Engineering Squadron.
The 814th Security Policy Squadron.
The 814 Services Squadron.
The 814th Mission Support Squadron.
- **The 814th Supply Squadron.**
- **The 814th Transportation Squadron.**
- **The 814th Comptroller Squadron.**

Units that are not part of the 14th Air Division include:

- **The 814th Strategic Hospital.**
- **Detachment 6 of the 3904th Management Engineering Squadron, SAC.**
- **The 7th Missile Warning Squadron, tenant.**
- **The 1360th Audiovisual Squadron, tenant.**
- **Detachment 626 of the 3753rd Field Training Squadron, tenant.**
- **Detachment 11 of the 9th Weather Squadron, tenant.**
- **The 1883rd Communication Squadron, tenant.**
- **The Air Force Commissary Service, tenant.**
- **The Air Force Legal Services, tenant.**
- **The Air Force Office of Special Investigations, tenant.**

(Source: Captain Mark Plaster, Beale AFB, Det 6, 3904 MES/SAC MET).

The deactivation of the SR-71 program will begin with the loss of one unit from Beale--the 1st Strategic Reconnaissance Squadron. This squadron includes 30 officers, nine enlisted personnel, and one civilian. Other units of the 9th Strategic Reconnaissance Wing associated with the SR-71 program will also experience personnel reductions. This deactivation has been addressed in a separate Environmental Assessment (EA) (HQ SAC, January 1990).

Changes in flight operations are expected as a result of both the force structure change and the realignment. Table 2-2 presents estimates of average daily operations and projected maximum changes. The projected maximum cumulative average operations per day include an undetermined classified number of T-38 and KC-135 aircraft associated with the deactivation of the SR-71 program.

2.2.2 Construction and Facility Siting Alternatives

Construction of new facilities and upgrading of existing facilities will be required to provide adequate support to implement the realignment action. Based on the construction schedule and operational requirements, Beale AFB will be ready to begin accepting the SUNT in FY 93. All realignment actions are expected to be completed by the end of FY 93.

Planning assistance for the siting of new facilities required as a result of the relocation of the SUNT to Beale AFB was requested by HQ SAC. In response, a Planning Assistance Team (PAT) was organized and managed by the office of the Air Force Regional Civil Engineer, Western Region. The PAT consisted of members representing the following disciplines: airfield planning, aircraft maintenance, architecture, community and environmental planning, and engineering.

The PAT focused attention primarily on facilities identified and required by SAC and ATC. Professional engineering and community planning judgment, guidance and standards established by Air Force directives, expressed local interests, and functional relationships were used to recommend siting for functional complexes and individual facilities. Factors for siting facilities considered by the PAT included the general and specific guidance set forth in AFR 86-4, Base Comprehensive Planning, and other associated directives; the airfield and airspace criteria contained in AFR 86-14; contaminated areas being investigated or remediated in accordance with the Air Force Installation Restoration Program (IRP); quantity-distance zones around explosives storage sites; AICUZ noise zones; an evaluation of existing facilities in the development zones for contribution to or impact on the new functional use of the area, and conversion or removal if required; existing and projected traffic patterns and volumes; operational requirements expressed by the senior staffs at Beale AFB and Mather AFB; and functional relationships.

Complexes, or groups of facilities, were established based on functional relationships between facilities with existing compatible functions and land use zones so that similar functions would be consolidated. Spatial requirements, physical limitations, and environmental concerns were also major considerations. As a result, ~~three complexes were developed: the base support complex, the base support complex, and the base support complex.~~ The base traffic

TABLE 2-2
Aircraft Operations and Expected Changes in
Operations at Beale AFB

<u>Aircraft</u>	<u>Current Average Operations Per Day¹</u>	<u>Projected Changes in Average Operations Per Day</u>	<u>Projected Maximum Cumulative Average Operations Per Day</u>
SR-71	3	-3	-
T-38	232	- ²	232 ²
KC-135	156	- ²	156 ²
T-37	-	+183 ³	183
T-43	-	+49 ³	49
Others	<u>277</u>	<u>-</u>	<u>277</u>
TOTAL	668	+229	897

¹ Source: USAF, HQ SAC, 1990.

² Some T-38 and KC-135 operations are associated with the SR-71 program; however, the numbers of such operations are classified. Therefore, reductions in T-38 and KC-135 flight are expected, but have not been included in this analysis.

³ Source: USAF Engineering Services Center, Tyndall AFB, Florida.

network and existing facilities that would be consolidated, displaced, and/or relocated to other sites were also evaluated.

Adjustments and refinements to the recommended PAT sitings were made by the base and both Commands to take advantage of consolidation savings and joint use of facilities. The goal was to build the most efficient and cost-effective operation.

The required construction activities are shown in Table 2-3. The programmed cost of each construction project and the budget year in which funding will be provided are also shown in this table. **Figures 2-1 through 2-4 show the preferred or selected locations of the facilities; the facilities are referred to on the figures as indicated in the reference key column in Tables 2-4 through 2-6. Table 2-7 presents information about buildings that may be demolished to allow construction of new facilities.** These buildings are also shown on Figures 2-1 through 2-4 using the reference key indicated on this table. **The alternative sites considered for required complexes are shown on Figure 2-5.**

2.2.3 Required Construction and Facilities

Principle components of the realignment action will require construction of new facilities and modifications to existing facilities. Construction will range from FY 90 through FY 93, with the SUNT fully operational at Beale by the fourth quarter of FY 93. The general purpose of each complex or grouping of facilities, with specific concerns and alternatives for siting of these facilities, follows.

2.2.3.1 Consolidated Aircraft Maintenance Complex (CAMS)

The primary facilities needed to accommodate the additional aircraft maintenance functions being relocated to Beale AFB are listed in Table 2-4. The square footage shown in the area column is the footprint or the amount of land area required for each facility.

The facilities planned for the CAMS, listed in Table 2-4, include a two-bay, high-bay maintenance hangar with adjacent apron and ramp for 14 T-43 aircraft. Two single story structures are planned. One would house the Field Maintenance Shop and the other would house both the T-37 and T-43 Squadron Operations, as well as storage space for aircrew and survival equipment. A building is planned for the COMBS warehouse to store spare parts for the T-43 aircraft and will also house the Avionics Shop. A facility for repair of the fuel systems is planned. New roadways for access to and circulation within the CAMS will be required, and utilities will need to be extended to the CAMS location. A Plating Shop will be relocated from Mather as part of the realignment. It is expected to be located in the flightline, possibly in the CAMs. No further information is currently available on its placement.

Three sites were considered for the CAMS that met the major siting criteria of proximity to the flightline and adequate space for all necessary facilities. One potential site is at the southern end of the runway on the existing SR-71 trim pad, which would require demolition of the trim pad. However, the T-43 requires the use

TABLE 2-3

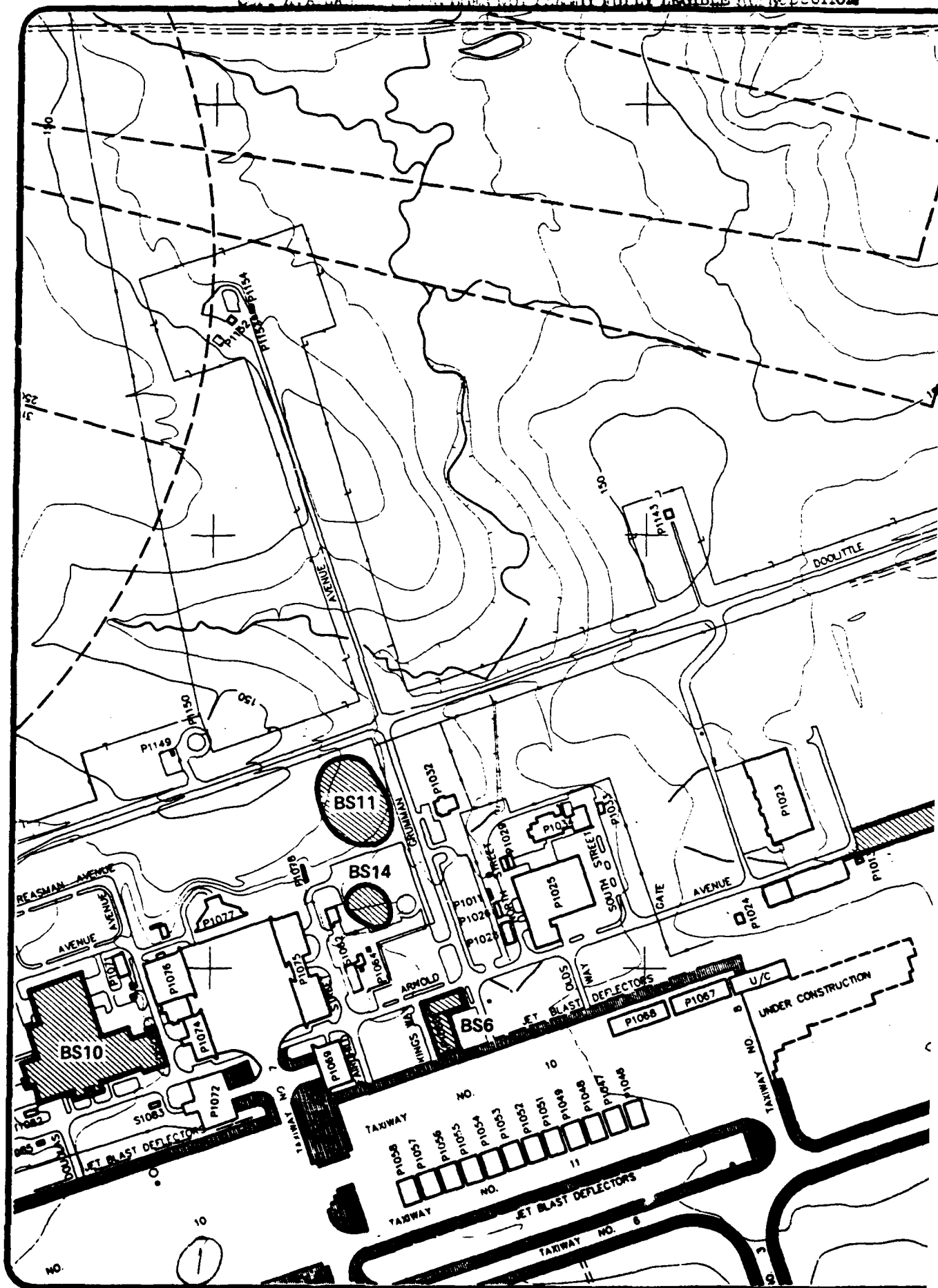
Programmed Project Cost and Budget Year

<u>Project</u>	<u>Programmed Amount (\$ Millions)</u>	<u>Budget Year (Fiscal Year FY)</u>
Flight Simulator Training Electronic Weapons Officer (EWO)	\$8.7	1991
Flight Simulator Training (T-45)	6.6	1991
Wing Headquarters and Operations Staff Facility	3.7	1991
Combined Squadron Operations Facility	5.3	1991
Academic Facility	7.3	1991
Visual Information and Training Aids	3.1	1991
Physiological Training	1.5	1991
Fiscal Year 1991 TOTAL	\$36.2	
Student Officer Dormitory	28.0	1992
Modify Hospital	14.7	1992
Apron Ramp	14.4	1992
Utilities and Roads	1.8	1992
Fuel Systems Maintenance Dock	3.4	1992
Hangar	11.4	1992
Field Maintenance Shop	2.6	1992
Avionics Shop	2.0	1992
Contractor Operated/ Managed Base Supply (COMBS) Warehouse	0.9	1992

TABLE 2-3 (cont'd)

<u>Project</u>	<u>Programmed Amount (\$ Millions)</u>	<u>Budget Year (Fiscal Year FY)</u>
Squadron Operations (T-37)	3.4	1992
Squadron Operations (T-43)	2.5	1992
Transient Lodging Quarters	1.3	1992
Visiting Officers Quarters	1.4	1992
Military Personnel Base Support Center	4.8	1992
Fiscal Year 1992 TOTAL	\$92.6	
In-Flight Kitchen	0.4	1993
Officers Open Mess	6.2	1993
Army Air Force Exchange Service (AAFES) Facilities (Commissary and Shop and Gas)	6.8	1993
Modify Administrative Facility	1.4	1993
Modify Survival Equipment Shop	0.7	1993
Modify Physical Fitness Centers	6.2	1993
Modify Furniture Storage and Communication Facility	0.7	1993
Enlarge Child Development Center	0.9	1993
Refueling Vehicle Parking	0.3	1993
Fiscal Year 1993 TOTAL	\$23.6	
Military Construction: (all years) TOTAL	\$152.4	

Source: Personal Communications, Ms. Mary Peters, HW SAC, February, 1990.



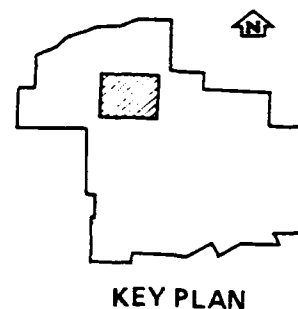
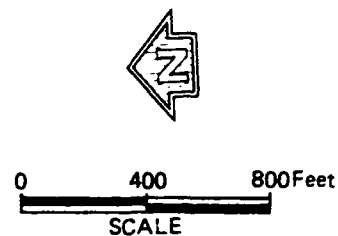
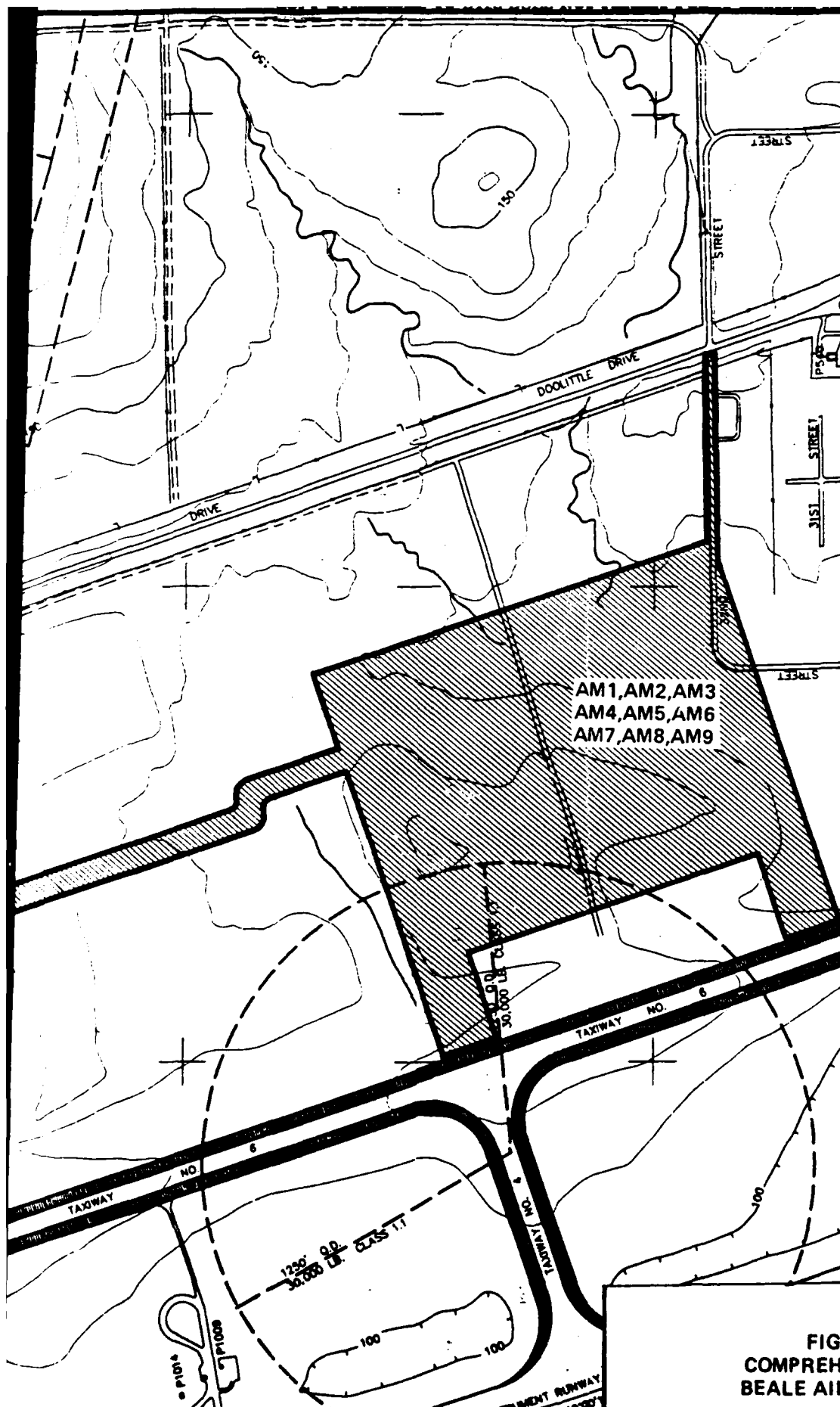


FIGURE 2-1
COMPREHENSIVE PLAN
BEALE AIR FORCE BASE

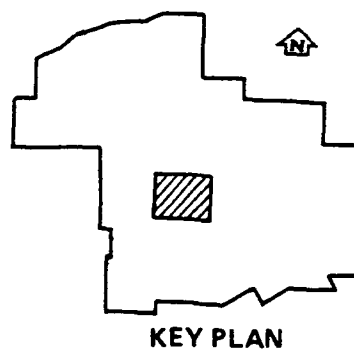
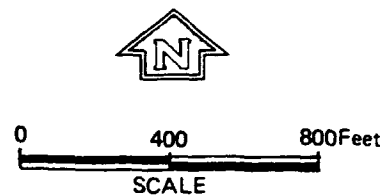
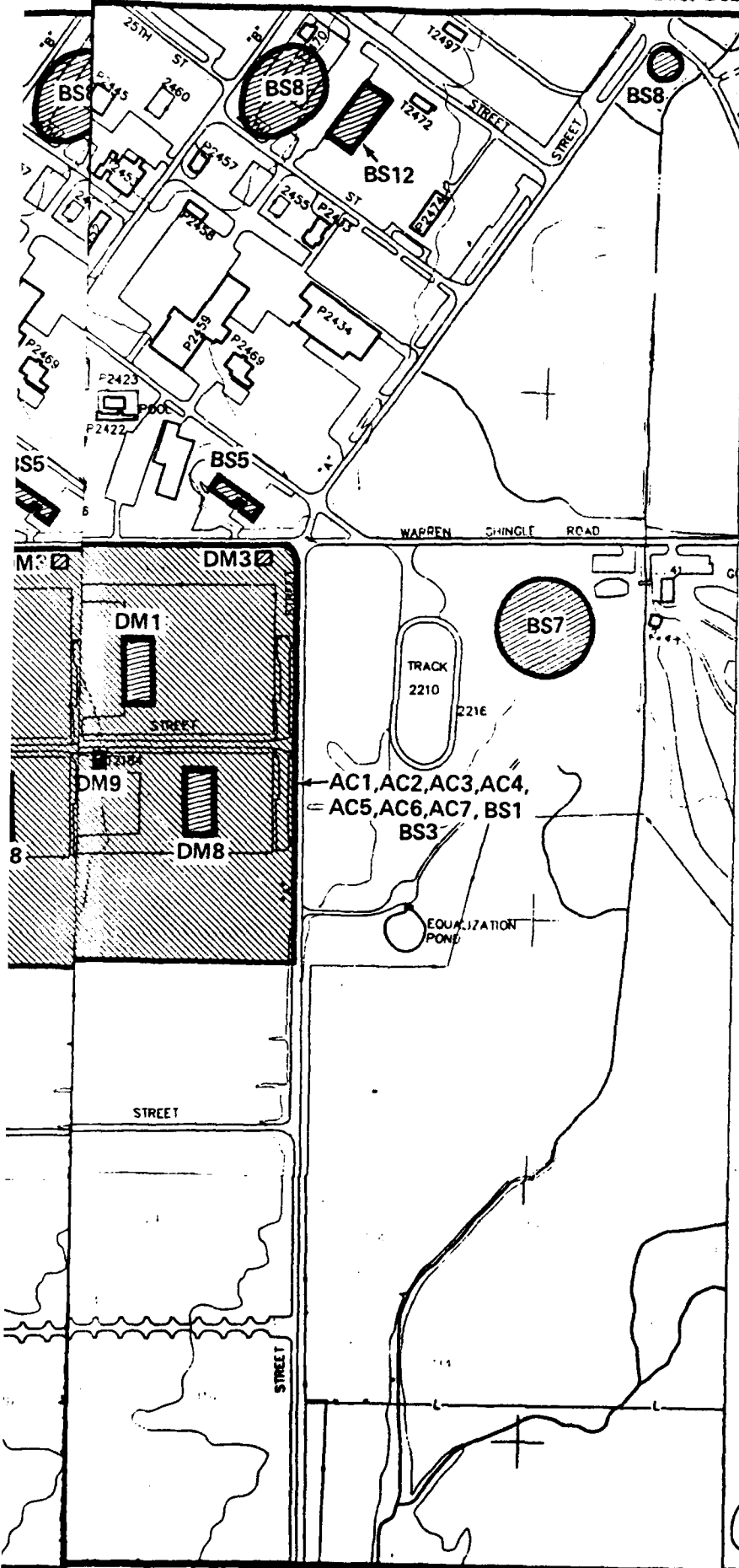
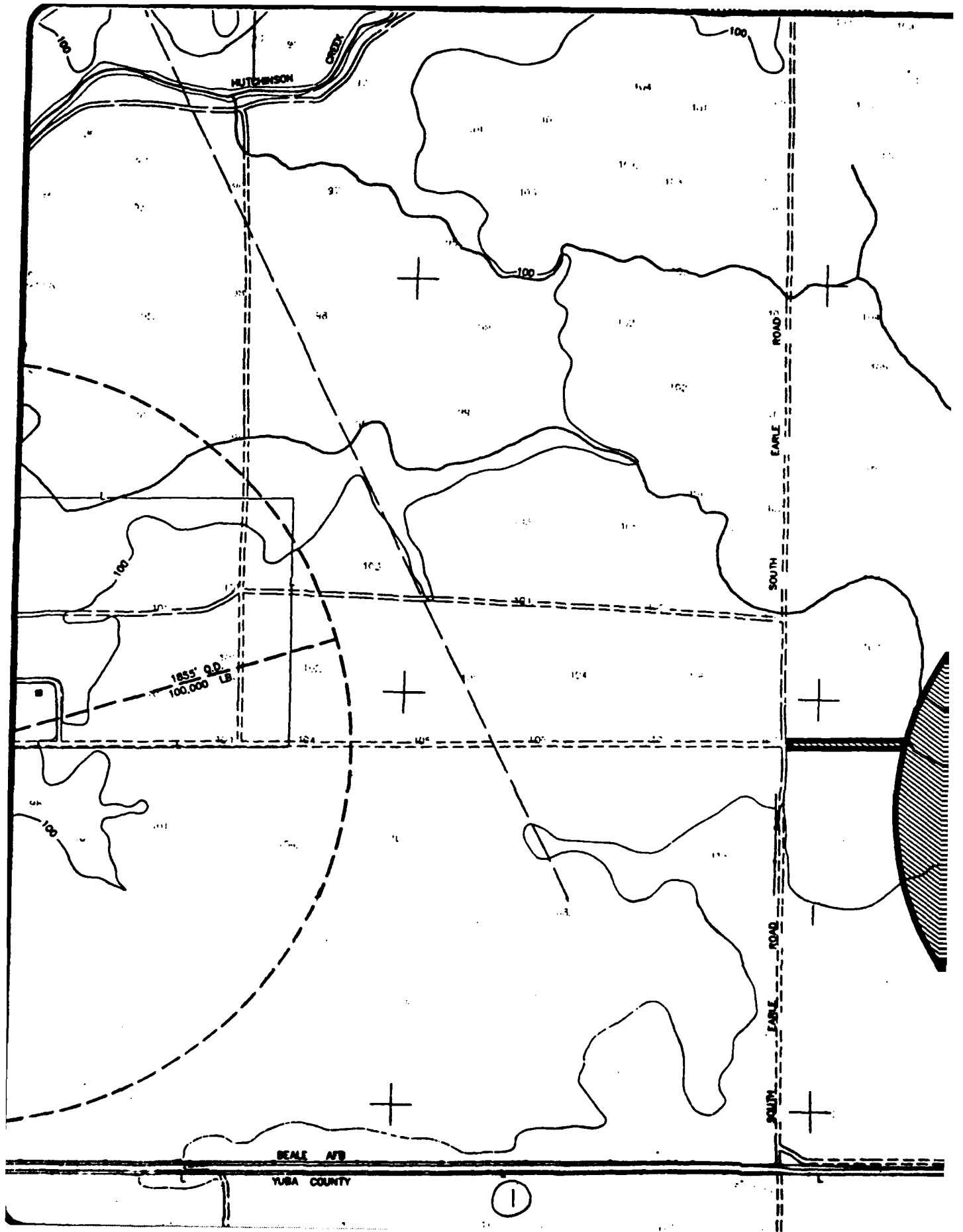
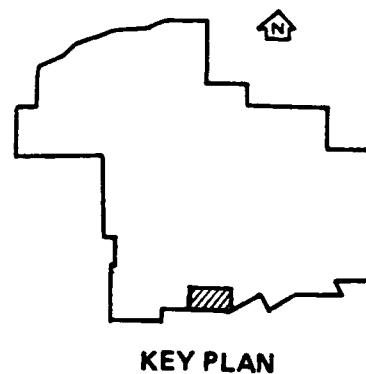
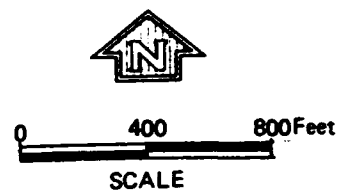
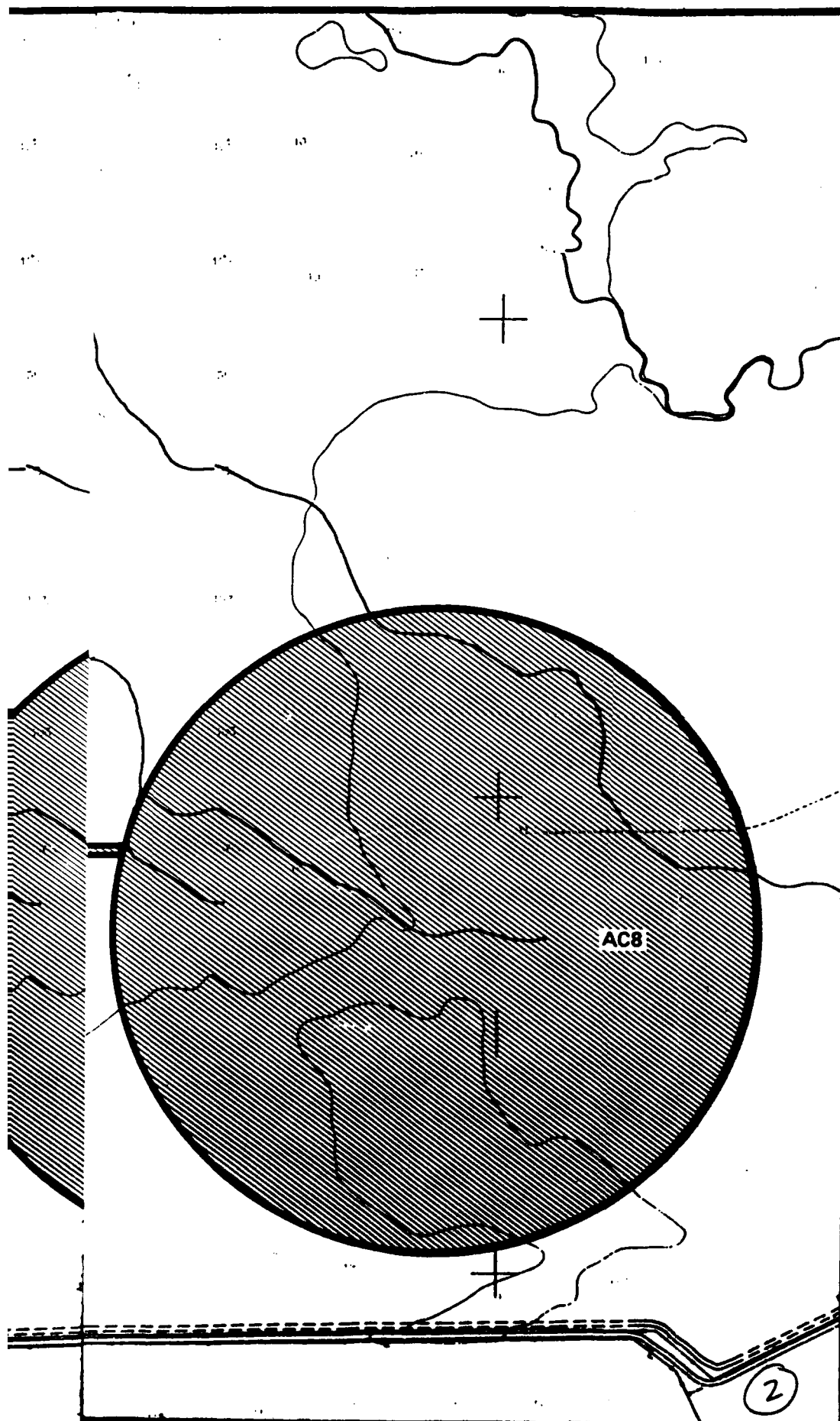
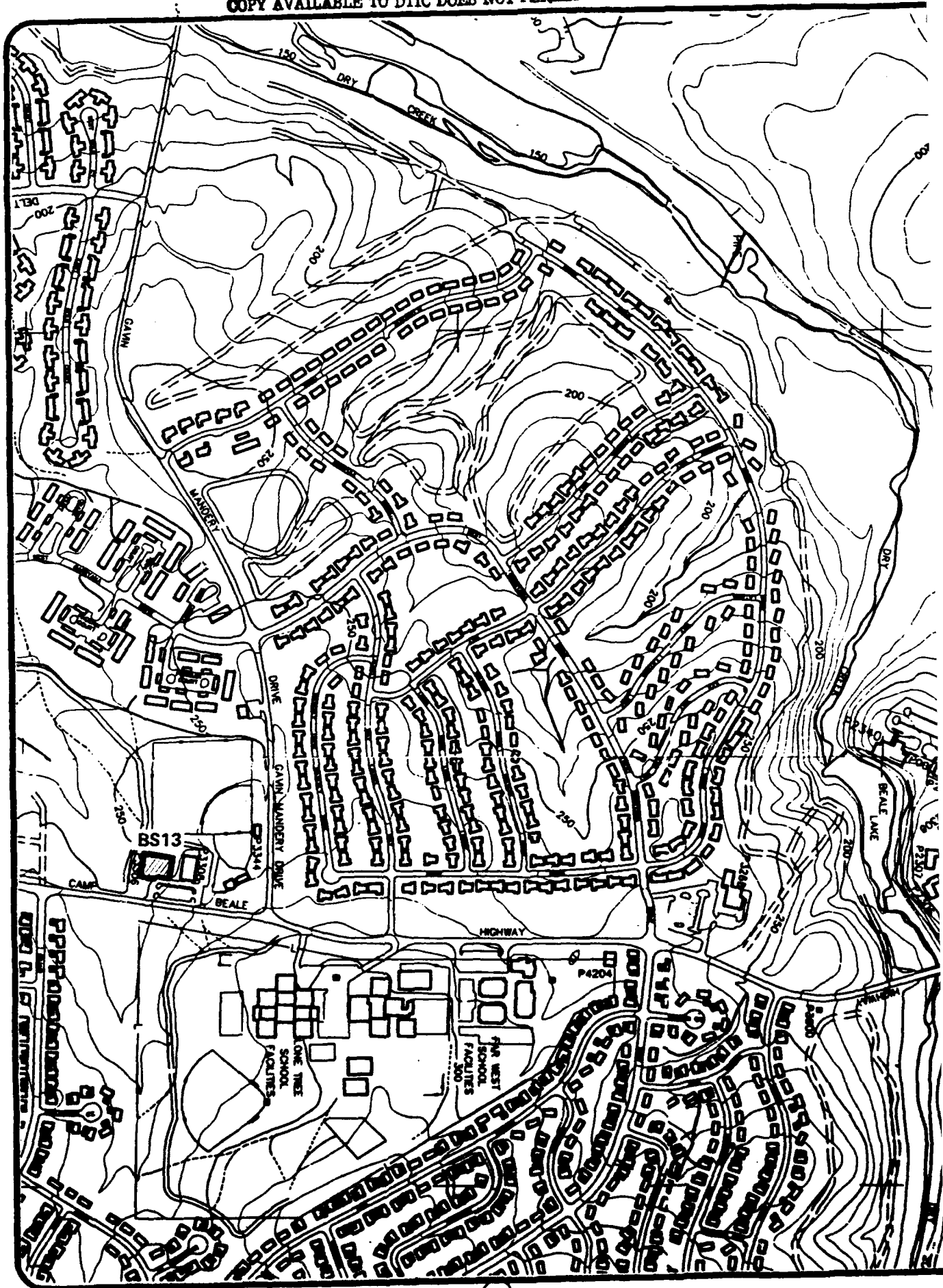


FIGURE 2-2
COMPREHENSIVE PLAN
BEALE AIR FORCE BASE





**FIGURE 2-3
COMPREHENSIVE PLAN
BEALE AIR FORCE BASE**



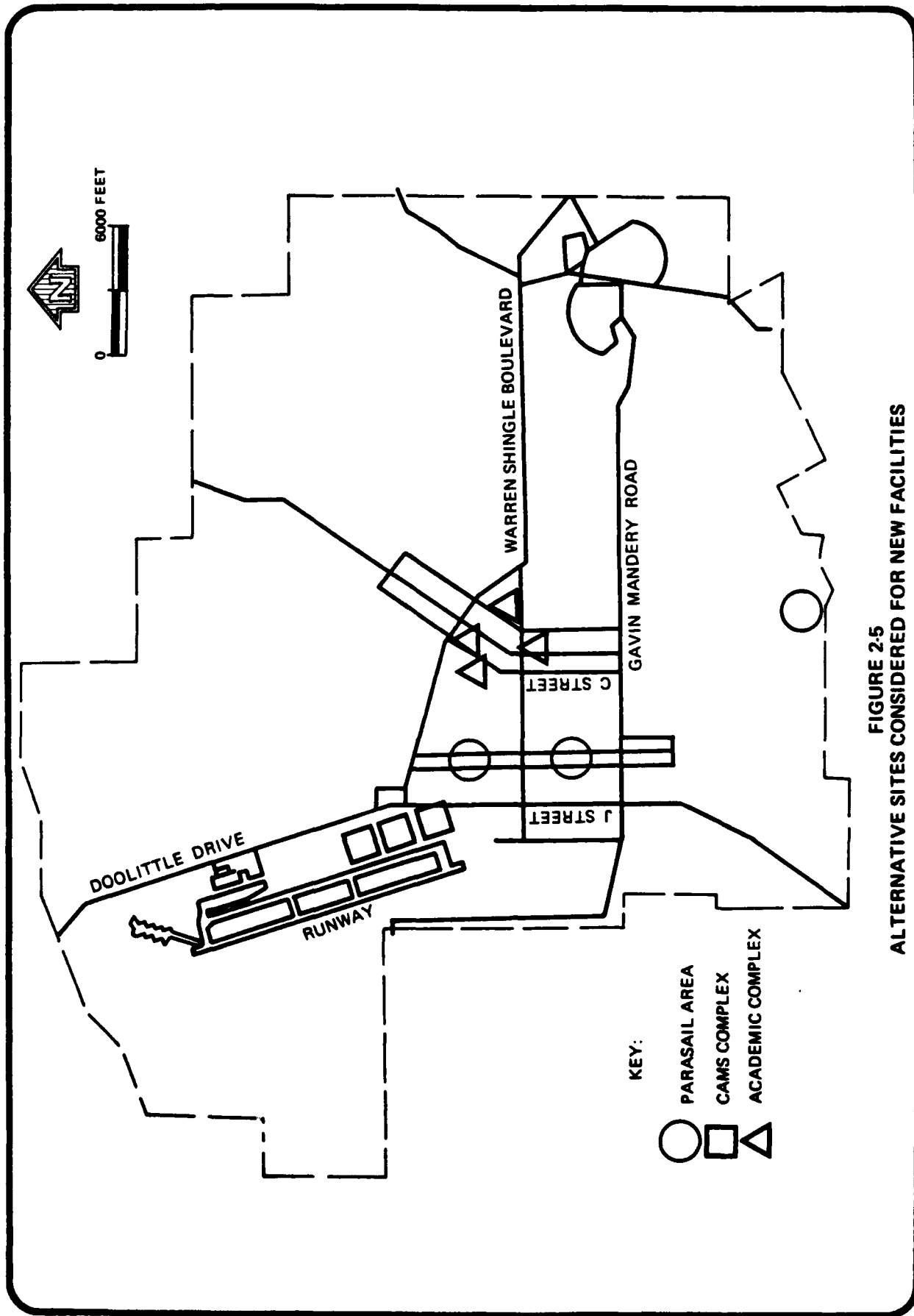


FIGURE 2-5
ALTERNATIVE SITES CONSIDERED FOR NEW FACILITIES

TABLE 2-4
Consolidated Aircraft Maintenance (CAMS) Complex

<u>Reference Key</u>	<u>Facility</u>	<u>Area (square feet)</u>	<u>Need Date¹</u>
AM1	Apron Ramp	864,000	4/93
AM2	Utilities and Roads	NA	12/92
AM3	Fuel Systems Maintenance Dock	17,600	4/93
AM4	Hangar	51,500	4/93
AM5	Field Maintenance Shop	17,700	4/93
AM6	Avionics Shop	12,000	4/93
AM7	COMBS Warehouse	12,000	4/93
AM8	Squadron Operations (T-37)	18,400	4/93
AM9	Squadron Operations (T-43)	12,000	4/93

Source: Personal Communications, Ms. Mary Peters, HQ SAC, February 1990.
NA = Not Applicable.
¹Month/Year

of a trim pad facility for maintenance and, therefore, it was not deemed economically feasible to demolish the existing trim pad when a new use is expected for it.

Another site is north of the site discussed above and adjacent to and partly overlapping the Fire Protection Training Area. These areas have been identified and investigated under the ongoing IRP and are jointly referred to as FT-04. The FT-04 site is contaminated by fuel hydrocarbons and lead that may potentially threaten groundwater. Cleanup of this contamination is likely to be required, which could delay construction at this location.

In addition, these first two sites are within a larger area designated as ST-23 under the IRP. Old base maps showed 753 locations where underground storage tanks (USTs) may have been abandoned within the former boundaries of Camp Beale. Magnetometers identified 10 possible USTs in an area known as the Camp Beale Hospital Area, a subpart of ST-23. The second alternative CAMS location overlaps part of the Hospital Area. Investigation and removal of possible USTs from this area coupled with possible remedial actions associated with IRP FT-04 led to the exclusion of this alternative location from further consideration.

Another site considered for the CAMS is north of the other two sites and adjacent to taxiway 14. Some grading will be required on this site to prepare it for construction. A small part of this alternative site overlaps IRP ST-23 and its subunit, the Camp Beale Hospital Area. One historic location is shown on the 1911 Downs Valley USGS topographic quadrangle, surveyed in 1909. DoYLES 1887 map identifies the landowner as M. Shaw. No surface manifestation of this structure currently exists. Archaeological remains of this structure may be present in or near this site. Of the three sites considered, this one has the poorest potential for future expansion; however, this site has been selected for locating the CAMS because it is the most economical and practical.

2.2.3.2 Base Operating Support Complex (BOS)

The purpose of BOS facilities is to provide all those facilities and activities that are necessary for the day-to-day operation of the base and for support of the host and tenant mission. This also includes all Morale, Welfare, and Recreation facilities. Upgrades to existing BOS facilities and construction of new BOS facilities are required to accommodate the realignment. These requirements, presented in Table 2-5, constitute the BOS complex. Other significant space requirements in addition to those for the primary facilities include space for access drives and loading docks for logistics-related functions and privately owned vehicle parking for employees and visitors. Siting criteria included the consideration of access and locations convenient for users. While the BOS complex forms a functional unit, its elements are physically dispersed throughout the base. Each element has distinctive siting requirements that are intrinsic to that element's function.

The Student Officer Dormitory will house the SUNT students while they are receiving training. The dormitory is planned to be adjacent to the buildings in the Academic Complex in the cantonment area. The Transient Lodging Quarters is also planned to be adjacent to the Academic Complex buildings. These quarters will

TABLE 2-5
Base Operating Support

<u>Reference Key</u>	<u>Facility</u>	<u>Area (square feet)</u>	<u>Need Date¹</u>
BS1	Student Officer Dormitory	250,000	8/93
BS2	Enlarge and Modify Hospital	50,800	7/93
BS3	Transient Lodging Quarters	20 units	1/93
BS4	Visiting Officers Quarters	15 units	1/93
BS5	Military Personnel Base Support Center	30,000	1/93
BS6	In-flight Kitchen	1,050	5/93
BS7	Officers Open Mess	7,500	1/93
BS8	AAFES Facilities	75,536	9/93
BS9	Modify Administrative Facility	31,400	1/93
BS10	Modify Survival Equipment Shop	5,000	1/93
BS11	Enlarge Contonment Physical Fitness Center, New Physical Fitness Center in Flightline	29,000	6/93
BS12	Modify Furniture Storage and Communication Facility	21,000	1/93
BS13	Enlarge Child Development Center	5,000	6/93
BS14	Refueling Vehicle Parking	10,800	4/93

Source: Personal Communications, Ms. Mary Peters, HQ SAC, February 1990.
¹Month/Year

provide temporary housing for enlisted personnel assigned to Beale AFB. Visiting Officers Quarters are planned near, and slightly west of, the Academic Complex. The major siting concern, which was common to all three of these living facilities, is to place them near facilities their occupants will use most heavily. Therefore, they are planned for locations in or near the Academic Complex and in the cantonment area. To provide food service close to the Academic Complex, where SUNT personnel will work and SUNT students will both live and study, an Officers Open Mess is planned east of the Academic Complex.

Several additional BOS facilities are planned to be built or modified within the cantonment area. Locations for new buildings were chosen to be close to similar activities, near concentrations of base personnel, and to have good access. These facilities include Army Air Force Exchange Service (AAFES) facilities--a new Commissary, a small Shop and Gas convenience store, and expansion of the Base Exchange. The Commissary is planned for an area northeast of 25th Street and southeast of B Street and was planned independently of the realignment action. The Shop and Gas is planned for the south quadrant of the intersection of A Street and Doolittle Drive. Another new facility will be the Military Personnel Base Support Center, also known as the Consolidated Base Personnel Office. Facilities to be modified or enlarged in the cantonment area will include Administrative Facilities, the Fitness Center, the Furniture Storage and Communication Facility, and the Base Exchange.

All BOS facilities planned for the cantonment area will be within the boundaries of IRP Site 22. Four possible UST locations were detected by magnetometer in the cantonment area south of Warren Shingle Drive. Investigation of potential locations and removal operations are proceeding and will be completed prior to initiation of construction activity.

While most BOS facilities, existing and planned, are in the cantonment area, a few exist on and are planned for other parts of the base. The Hospital and the Child Development Center, located in the eastern part of the base near the family housing area, will be enlarged. The hospital is near two historic sites, both mining ditches identified on a 1871 U.S. General Land Office survey plat.

Four BOS facilities are planned for the flightline. The specific requirements of personnel on the flightline and the nature of these facilities require their placement there. These facilities include an In-Flight Kitchen and a Physical Fitness Center. Modifications to an existing building will house the Survival Equipment Shop. Parking for Refueling Vehicles will be added adjacent to existing parking.

2.2.3.3 Academic Complex

The primary facilities needed to provide the academic component of the 323rd Flying Wing's training mission at Beale AFB are listed in Table 2-6. The square footage shown in the area column is the footprint for the amount of land area required for each facility.

TABLE 2-6

Academic Complex

<u>Reference Key</u>	<u>Facility</u>	<u>Area (square feet)</u>	<u>Need Date¹</u>
AC1	Flight Simulator Training (EWO)	40,500	1/92
AC2	Flight Simulator Training (T-45)	29,800	11/92
AC3	Wing Headquarters and Operations Staff Facility	21,000	1/93
AC4	Combined Squadron Operations Facility	26,600	11/92
AC5	Academic Facility	53,000	11/92
AC6	Visual Information and Training Aids	28,000	4/93
AC7	Physiological Training	9,500	11/92
AC8	Parasail Area	51 acres	1/93

Source: Personal Communications, Ms. Mary Peters, HQ SAC, February 1990.

Notes:

¹Month/Year

²The acreage for the Parasail Area includes all the land inside the parameter road. Most of this land will not be disturbed.

The Academic Complex must provide all the facilities for navigator training other than those directly related to the aircraft at the flightline. Space is required in the main complex for classrooms, navigator and electronic weapons officer (EWO) simulators, aerospace physiology functions, associated headquarters and student squadron operations, and a Parasail Area, which will be used for parachute training. The Academic Complex--one functional unit--will occupy two sites because of the specific requirements for the Parasail Area, which are discussed later in this section. The facilities that will be adjacent to one another will be referred to as the main Academic Complex, whereas the functional Academic Complex refers to these facilities and the Parasail Area.

Four siting alternatives were considered for the main Academic Complex, all in the cantonment area. Three primary siting criteria for this Complex were integration of the planned facilities with the Base Comprehensive Plan, proximity to community and administrative support functions, and visual enhancement of the southern portion of the cantonment area, which serves as a "gateway;" for visitors to the base.

One site considered is in the west-central part of the cantonment area, south of Doolittle Drive and between B and C Streets. This site is not close to some highly-used support facilities, nor does it allow for future expansion. It also would not have a positive impact on the visual quality of the gateway.

Another site considered is adjacent to the site described above, south of the ball fields and west of C Street. This site is not close to support facilities and encroaches on land projected for other uses in the Base Comprehensive Plan.

A site on the eastern edge of the cantonment area, northwest of Warren Shingle Drive, southwest of a drainage channel, and east of A Street was also considered. In addition to the large drainage forming the approximate boundary of the site, other small drainage channels cross the site, posing potential environmental and construction problems. Also, SUNT use of this site would not integrate well with the Base Comprehensive Plan.

The selected site is at the southern edge of the cantonment area, south of Warren Shingle Drive between A and C Streets. No major negative features are associated with this site and it provides a visual improvement for the gateway area.

The Parasail Area presents an unusual siting problem for a large area. The area between A and C Streets is 2,500 feet wide and runs for 250 feet. Underneath is a 100-foot wide, 100-foot deep drainage channel. The drainage will be used by water vehicles that will tow parasail airplanes as they practice parachute jumping. The site will also be used for training in parachute jumping and for support facilities, support functions, and for training in parachute jumping and for support facilities. Alternative locations for this use are still under consideration. Three potential sites, which are described below, meet the basic criteria of the Base Comprehensive Plan.

A site considered is south of Doolittle Drive, between the cantonment and the flightline areas. Concrete foundations and roadbeds remaining from previous

developments would have to be removed before construction of a Parasail Area could begin. Washes associated with the Hutchinson Creek drainage would be filled to provide level ground. A U2 flight track crosses the airspace above this site. The U2 may fly as low as 500 feet, while a parasail trainee may be towed as high as 300 feet; therefore, this site allows a very small margin of safety (200 feet) for parasail trainees and U2 aircraft. Currently, this site is used as a bivouac area by Beale AFB. This training activity would have to be relocated if the Parasail Area is located here.

Another site considered is south of Warren Shingle Road, between the cantonment and the flightline areas, and south of the site described above. Foundations and roadbeds from previous development would require removal, and washes associated with Hutchinson Creek, which may include some wetlands, would need filling and leveling. This location is rather close to the base railroad siding and tank farm where fuel is delivered and stored, which may present a potential safety hazard.

The preferred site for the Parasail Area is near the southern base boundary, west of South Earle Road. Although somewhat distant from the main complex, this site is the most economical, requiring no removal of previous development. Also, less grading and filling would be required because this area is generally flat; however, access roads to the site will need to be upgraded. ~~Generally, vernal pools are known to exist on this portion of the base.~~ A reconnaissance of this site was conducted in May 1990 by a botanist affiliated with the Nature Conservancy and the base natural resource coordinator to determine if a vernal pool survey would be appropriate. No evidence of vernal pools was found at the preferred Parasail Area site, although some pools were noted in other areas of the southern portion of the base (Personal Communication, Mary Anne Criggo, The Nature Conservancy, June 1990). The area in which this site is located has been identified for possible location of artificial wetlands habitat to replace similar habitat that may be lost due to any future construction. Research of historic documents has identified four potential areas of cultural resources near or within this preferred site. Two are indicated on an 1856 survey plat as houses, one marks the location of a school house that was moved by 1887 to another location, and one is an unidentified structure shown on a 1940 map. No physical evidence of these potential resources has been recorded. The nature of the Parasail facility should allow it to be sited without disturbing these resources if present.

2.2.3.4 Family Housing

The Air Force has conducted a market analysis to determine the number of additional permanent housing units needed to support the realignment of Beale AFB. However, a final determination of the number of units needed, if any, has not been made. Build-to-lease housing is proposed for construction under the authority of Section 801 of the 1984 Military Construction Authorization Act (10USC 2828(g)). Build-to-lease (or Section 801) housing is constructed by a private developer, usually on privately owned land. The housing will be leased to the Air Force who will operate and maintain it for 20 years. Infrastructure and utility systems are required to be turned over to their respective municipality, tax district, or utility company. The Air Force has the right of first refusal to purchase the property should the private

developer wish to sell. Section 801 housing can be developed on government-owned land only with special permission of the Secretary of the Air Force, permission that is infrequently given.

A preferred site has not been chosen at this time. Three sites, each of more than 100 acres, are being considered for possible construction of Section 801 housing. One site is on base, just south of existing housing, on Lark Drive and East Garryanna Drive. This land has been identified by the Government Services Administration as excess property to be sold. However, its current government ownership will pose difficulties in qualifying for Section 801.

The other two sites are off base. Both are south of the base, near and north of the town of Wheatland. One is at the edge of the town and the other is between the base and the town. If it is determined that additional housing is required, the impact from its construction and use will be assessed in a separate NEPA document.

2.2.3.5 Demolition Candidates

Ten structures will be demolished to make way for planned new construction. All are in the cantonment area in or adjacent to the planned site of the main Academic Complex. The structures are listed in Section A of Table 2-7 and shown on Figure 2-2. An additional four structures in the same area are being considered for removal but their demolition has not been approved by the base. They are listed in Section B of Table 2-7 and also shown on Figure 2-2. The potential for these structures to be qualified for inclusion on the National Register of Historic Places has not been analyzed. Provisions of the National Historic Preservation Act, including consultation with the SHPO, will be implemented prior to demolition. In addition, the DOD Memorandum of Agreement with the ACHP and the National Conference of State Historic Preservation Officers concerning World War II temporary buildings may apply to some of the demolition candidates. Pertinent provisions of the Agreement will be adhered to, if appropriate.

2.3 SUMMARY OF MAJOR ISSUES AND POTENTIAL IMPACTS

Based on the results of discussions with USAF personnel and letters received from State and Federal agencies in response to the NOI, the scoping process has identified several areas of potential concern associated with the realignment of Beale AFB. Table 2-8 summarizes potential impacts of the realignment for the areas of potential concern.

TABLE 2-7

Buildings Considered for Demolition

A. Buildings that Beale AFB is prepared to have demolished.

<u>Reference Key</u>	<u>Building Number</u>	<u>Facility</u>
DM1	2195	Commissary Warehouse
DM2	2193	Hazardous Material Storage Facility
DM3	2198	High Voltage Electrical Switching Station
DM4	2174	Decontamination Facility
DM5	2176	Dormitory
DM6	2177	Dormitory
DM8	2185	Morale, Welfare, and Recreation Rental and Zone C Operations
DM9	2184	Incinerator
DM10	2180	Veterinarian
DM14	2131	Military Working Dog Kennels

B. Buildings that could be removed; however, demolition has not been approved by Beale AFB.

DM7	2175	Dormitory
DM11	2179	Class 6 Storage, Social Actions, and Area Defense Council
DM12	2171	Communications Squadron
DM13	2172	Communications Squadron

Source: Personal Communications, Ms. Mary Peters, HQ SAC,
February 1990.

TABLE 2-8

Potential Realignment Impacts on Key Areas of Concern

Area of Concern	Implementation of Realignment Action		Mitigation Measures
	Construction	Operation	
Mission and Operations	Negligible	<p>Increase personnel by 1,602</p> <p>Transfer 39 aircraft</p> <p>Increase flight operations by 34%</p> <p>Increase total base population by 3,435</p>	None
Geology and Topography	<p>Terrain modification</p> <p>Dust generation</p> <p>Potential for erosion</p>	<p>Earthquake-induced strong groundmotion</p> <p>Liquefaction, settlement, and expansion of soils</p> <p>Potential for erosion</p>	<p>Proposed:</p> <p>Dissipate and direct runoff.</p> <p>Revegetate</p> <p>Limit grading activity</p> <p>Balance cut and fill quantities</p> <p>Potential:</p> <p>Design and construct facilities to withstand strong groundmotion.</p> <p>Perform geotechnical investigations</p>
Air Quality	<p>ROC = 3.82 tons</p> <p>NO_x = 30.47 tons</p> <p>SO₂ = 2.65 tons</p> <p>CO = 53.96 tons</p> <p>PM₁₀ = 34.99 tons</p>	<p>Aircraft Emissions:</p> <p>ROC = 26.18 tons/year, 3% increase</p> <p>NO_x = 103.90 tons/year, 26% increase</p> <p>SO₂ = 4.76 tons/year, 8% increase</p> <p>CO = 85.16 tons/year, 0.04% increase</p> <p>PM = 5.37 tons/year, 25% increase</p> <p>Secondary Emissions:</p> <p>ROC = 5.10 tons/year</p> <p>NO_x = 6.32 tons/year</p> <p>SO₂ = 0.63 tons/year</p> <p>CO = 44.37 tons/year</p> <p>PM = 1.55 tons/year</p>	<p>Proposed:</p> <p>Implement dust suppressant measures</p> <p>Potential:</p> <p>Minimize overlap of construction activity</p> <p>Vapor recovery systems on gasoline-powered construction equipment</p> <p>Curtail construction activity during high ozone periods</p> <p>Pave haul routes and cover stockpiles</p> <p>Develop transportation plan</p> <p>State-of-the-art natural gas boilers for new facilities</p>
Water Resources	Negligible	Increase groundwater demand	<p>Proposed:</p> <p>Minimize grading activity during rainy months</p> <p>Incorporate best available storm water management practices into grading and site preparation</p>

TABLE 2-8 (cont'd)

Area of Concern	Implementation of Realignment Action		Mitigation Measures
	Construction	Operation	
Biological Resources	Loss of wetlands habitat Loss of introduced annual grassland habitat	Negligible	Proposed: Limit grading areas Exclude construction activity from cottonwood grove Avoid and protect wetland habitat Re-establish vegetation Develop vernal pool management area
	Ground disturbance may break, displace, or remove archaeological material	Increase potential for casual collecting and ground disturbance	Proposed: Initiate or complete surveys Conduct archaeological monitoring during construction Continue consultation with SHPO
Noise	Negligible	2% increase in land area exposed to noise in excess of 65 L _{eq}	Proposed: Minimize night flight activity None
Land Use	Negligible	2% increase in land area that may require use restriction because of noise levels	
Transportation	Negligible	671 additional peak period round trips ¹ Increased use of on-base roads, parking, and rail and truck deliveries	Potential: Improve intersections, reduce traffic in central cantonment area, and upgrade signing, striping, and beacons Improve and expand parking facilities Replace right-hand passing lanes with left-turn lanes Develop pathway systems Develop local road for Exchange and Commissary Develop collector road access to flightline Expand gates Encourage a decrease in single-occupant car trips
Utilities: Electrical Supply and Communications	Negligible	Negligible	None

TABLE 2-8 (cont'd)

Area of Concern	Implementation of Realignment Action		Mitigation Measures
	Construction	Operation	
Water Supply	Negligible	20% increase in water demand	<u>Potential:</u> Add second supply line to flightline Add additional supply pump Add water treatment for mineral levels
Waste Management: Solid Waste Disposal	Negligible	20% increase in waste generated	<u>Potential:</u> Recycle wastes
Wastewater Disposal	Negligible	20% increase in volume of wastewater Continued exceedance of permitted cyanide limit in discharge	<u>Potential:</u> Add backup lift pump Develop storm water management plan One of three alternatives to reduce cyanide in wastewater inflow, either a pretreatment unit for the plating shop outflow, contracting all plating to off-base businesses, or performing all plating at McClelland AFB.
Hazardous Waste Generation	Negligible	Increase in volume of hazardous waste	None
Installation Restoration Program	Negligible	Negligible	None
Underground Storage Tanks	Potential for tanks to exist at planned construction locations	Negligible	<u>Proposed:</u> Ground truthing of geophysical survey results and removal of tanks, if found Geophysical surveys of unsurveyed areas
Asbestos	Asbestos confirmed, suspected, or possible in buildings to be demolished or remodeled.	Negligible	<u>Proposed:</u> Detailed survey and sampling and appropriate remedial measures
Socioeconomics: Impact-Generating Factors	Construction spending	Additional base personnel spending	None
Demographics	Negligible	Population increase of 4,100 people, or 3.3%	None

TABLE 2-8 (cont'd)

Area of Concern	Implementation of Realignment Action		Mitigation Measures
	Construction	Operation	
Employment	3,465 additional person-years of construction work	2,200 additional jobs	None
Personal Income	\$70 million accruing to households	\$48 million annually accruing to households	None
Housing	Negligible	Increased demand for housing could be accommodated by existing market ²	None
Education	Negligible	450 to 475 additional students \$652,600 to \$688,850 in additional impact assistance	None
Community Services and Facilities	Negligible	Increased demand for these services and facilities ³	None

¹Impacts on peak round trips assumes no housing for permanent party will be added on base. The decision on this issue is still pending.

²A decision is still pending on the construction of additional housing. The suitability of vacancies in the existing market is still under study.

³The realignment action includes additions to these services and facilities.

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

3.1.1 History

Camp Beale, named for General Edward Fitzgerald Beale, opened in October 1942 with more than 86,000 acres of land. During World War II, the camp was used as an infantry training center, a personnel replacement depot, and a prisoner-of-war (POW) camp. The POW camp may be considered of historic importance. During the war, the camp supported a military population of more than 60,000 personnel.

Camp Beale was declared surplus in 1947, and in early 1948, transfer to the USAF was arranged. The base was used for bombardier-navigator training. In 1951, Headquarters USAF announced the reactivation of the Beale Bombing and Gunnery Range as a training site and officially changed the name to Beale Air Force Base.

During Beale's early years in the Air Force, the base underwent a number of organization changes, at times being a part of ATC, Continental Air Command, Aviation Engineer Force, and finally SAC. Early in 1959, it was announced that the 14th Air Division would be assigned to Beale AFB. In July 1959, Beale received its first KC-135 jet strato tanker, with B-52 bombers arriving shortly afterwards. In September of 1959, it was announced that Beale was to be the support base for three Titan missile sites. By 1965, the Titan I missile program had been discontinued, and the squadron was deactivated. Coupled with the deactivation of the missile unit, however, was the beginning of a new era in the history of the base with the activation of the 4200th SRW, later redesignated as the 9th SRW.

3.1.2 Mission

The mission of the 9th SRW is to provide global aerial reconnaissance and air refueling support in wartime in accordance with provisions of the Emergency War Order. In peacetime, reconnaissance flights and reconnaissance air refueling support are conducted in response to the Peacetime Aerial Reconnaissance Program and contingency tasking from the National Command Authorities and the Joint Chiefs of Staff. At the same time, the wing supports the requirements of unified and specified commands. After raw intelligence data are collected by reconnaissance aircraft, the 9th SRW processes, reports, and disseminates intelligence products to specified civilian and military users.

The major tenant organizations at Beale AFB are the 14th Air Division and the 7th Missile Warning Squadron. The 14th Air Division's mission is to ensure that units assigned to the division are capable of conducting worldwide strategic reconnaissance and maintaining an airborne command post in continuous operation.

The primary and secondary missions of the 7th Missile Warning Squadron's Precision Acquisition Vehicle Entry Phased Array Warning System (PAVE PAWS) are to provide warning and attack assessment of a sea-launched and/or intercontinental

ballistic missile attack aimed at the continental United States and Southern Canada. The tertiary mission is to provide surveillance, tracking, reporting, and identification of objects in space through a system known as Space Track.

Existing personnel who carry out these missions at Beale AFB are detailed in Table 3-1. Flight activity that fulfills Beale AFB mission objectives averages approximately 668 operations per day (USAF HQ SAC, 1990). An operation is one takeoff, one landing, one low approach, or one departure (as in a touch and go).

3.1.3 Existing Development

Development at Beale AFB is basically confined to three functional areas--the flightline area, the cantonment area, and the family housing area. Figure 3-1 presents these three areas in relationship to one another.

The flightline area, besides containing the mission-essential runway and associated taxiway and aprons, includes aircraft operation and maintenance facilities, mission support activities, supply activities, and ground vehicle maintenance and fueling activities. The runway is 12,000 feet long and 300 feet wide, with asphalt overruns of 1,000 feet on the south and 2,250 feet on the north. The runway is capable of handling any aircraft in the Air Force inventory. Additionally, Explosive Ordnance Demolition and fire protection and training functions are carried out in this area, as are some administrative operations. The flightline area has a small complement of community commercial and service facilities, as well as a small recreational facility.

The cantonment area supports many of the administrative functions and organizations operating in the flightline area. This area is also the central business district for the base, dominated by administrative, community commercial, unaccompanied housing, and industrial uses. Social, maintenance, medical, and spiritual facilities are located here, as are base engineering and environmental operations.

The family housing area provides base housing for accompanied officers and enlisted personnel. A fire station and an administrative office are also present here, along with a number of other community service, commercial, and recreational facilities.

3.2 GEOLOGY, TOPOGRAPHY

3.2.1 Geologic Setting

Beale AFB is approximately 40 miles north of the City of Sacramento in the eastern part of the Sacramento Valley. The Sacramento Valley together with San Joaquin Valley to the south constitutes the Great Valley of California (Figure 3-2). Extending from Redding in the north to Bakersfield in the south, this valley is about 60 miles wide, bordered to the east by Sierra Nevada Foothills and to the west by the Coast Ranges.

TABLE 3-1

Units Assigned to Beale AFB as of 8 February 1990

	Personnel		Total
	Military	Civilian	
14 Air Division	71	22	93
9 Strategic Reconnaissance Wing	241	6	247
5 Strategic Reconnaissance Training	39	1	40
99 Strategic Reconnaissance Squadron	53	-	53
349 Air Refueling Squadron	102	-	102
350 Air Refueling Squadron	104	-	104
9 Avionics Maintenance Squadron	133	-	133
9 Field Maintenance Squadron	304	9	313
9 Organizational Maintenance Squadron	357	1	358
609 Organizational Maintenance Squadron	315	4	319
9 Reconnaissance Technical Squadron	57	2	59
814 Supply Squadron	284	33	317
814 Transportation Squadron	117	28	145
814 Combat Support Group	42	28	70
814 Civil Engineering Squadron	263	179	442
814 Security Police Squadron	233	1	234
814 Services Squadron	64	2	66
814 Mission Support Squadron	89	27	116
814 Strategic Hospital	381	40	421
814 Comptroller Squadron	46	19	65
Detachment 6, 3904 Management Engineering Squadron	8	3	11
7 Missile Warning Squadron	65	7	72
1360 Audiovisual Squadron	15	1	16
Detachment 625, 3753 Field Training Squadron	28	-	28
Detachment 11, 9 Weather Squadron	15	2	17
1883 Communications Squadron	153	7	160
Detachment 6, 2163 Communications Group	11	-	11
Air Force Commissary	71	43	114
Air Force Legal Services	2	-	2
Air Force Office of Special Investigations	<u>5</u>	<u>1</u>	<u>6</u>
TOTAL	3,668	466	4,134

Source: Capt. Mark K. Plaster
 Det. 6, 3904 MES/SACMET
 Beale AFB

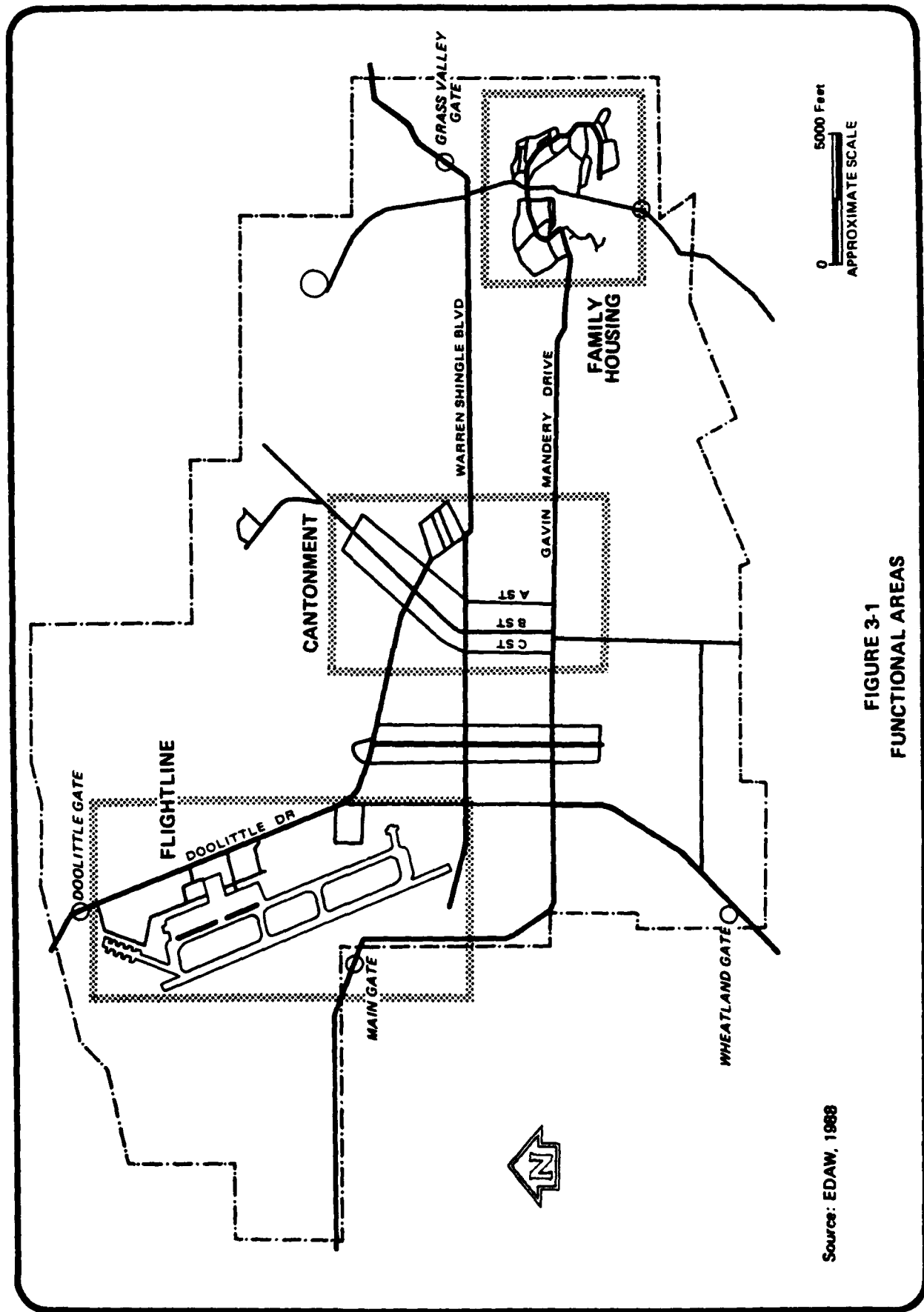


FIGURE 3-1
FUNCTIONAL AREAS

Source: EDaw, 1988

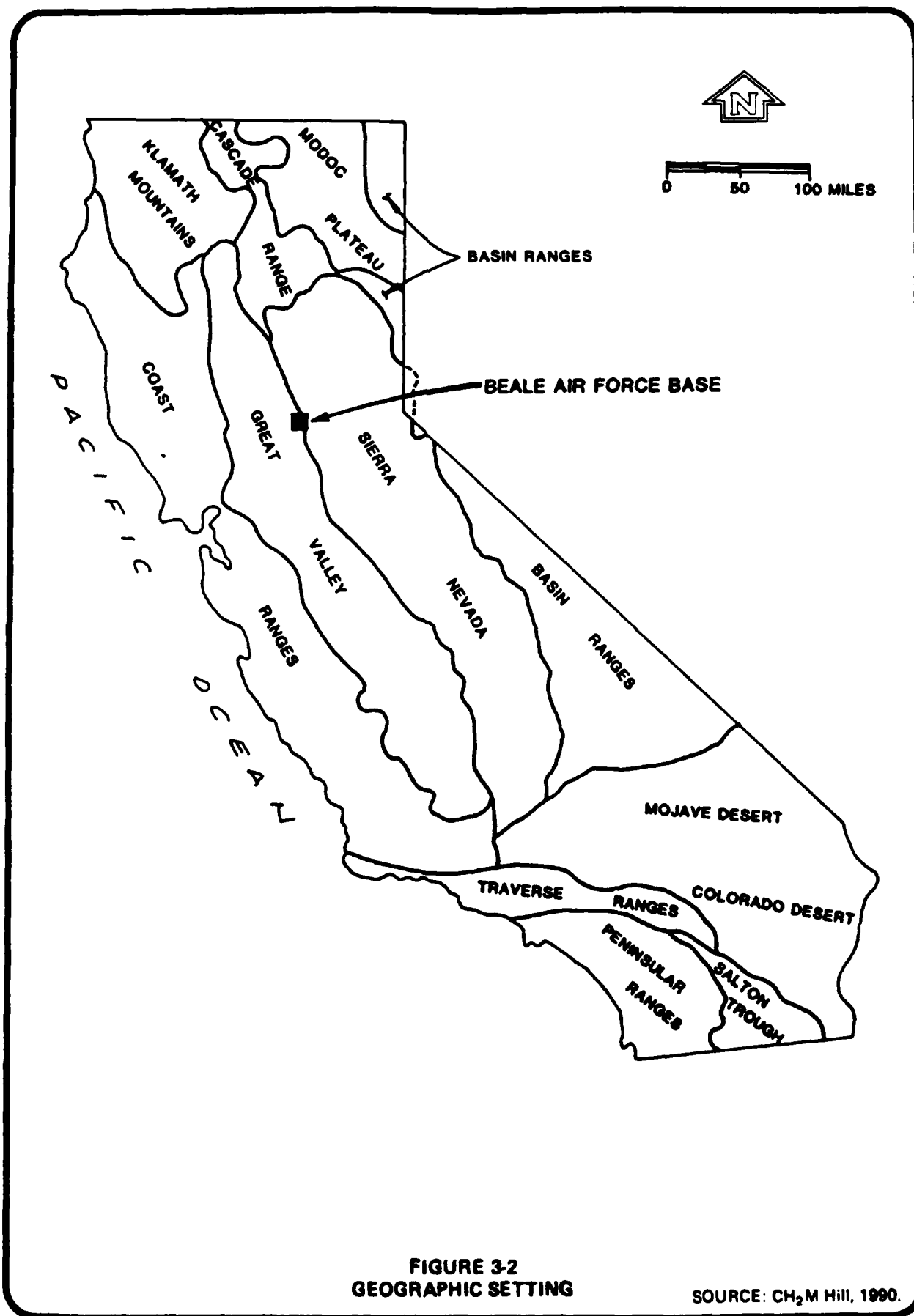


FIGURE 3-2
GEOGRAPHIC SETTING

SOURCE: CH₂M Hill, 1990.

3.2.2 Geomorphology

As shown on Figure 3-2, Beale AFB lies on the boundary of the Great Valley Province and the Sierra Nevada Province. The Sierra Nevada Province is a strongly asymmetric mountain range. It has formed as a huge block of the earth's crust that is being uplifted along a fault system on the east side of the range and tilted westward. This has resulted in the Sierra Nevada having a long, gentle western slope and a steep eastern escarpment.

The Great Valley Province was formed as a structural downwarp between the Coast Range Province on the west and the Sierra Nevada Province on the east. It has been filled with alluvial deposits derived from the erosion of the Sierra Nevada and the Coast Ranges. Extending more than 400 miles from north to south and averaging about 60 miles wide, the Great Valley comprises the Sacramento Valley in the north and the San Joaquin Valley in the south. On its eastern boundary, the alluvial deposits of the Great Valley overlap bedrock of the Sierra Nevada block, which continues to slope gently to the west.

Because of its location on the boundary of the two provinces, Beale AFB displays characteristics of both the Great Valley and the Sierra Nevada. The western portion of the base is relatively flat grassland, characteristic of the Great Valley. Moving eastward, the plains become low rolling hills that gradually merge with the foothills of the Sierra Nevada.

Three geomorphic units characteristic of the Great Valley Province are present at Beale AFB--river flood plains and channels, low alluvial plains and fans, and dissected uplands. These units are shown conceptually on Figure 3-3.

River plains and channels lie along the major drainages at Beale AFB. As these streams have meandered in recent geologic time, they have deposited sands and gravels along their channels, and silts and clays on their flood plains. Where present, these deposits may range in thickness up to about 100 feet on the western edge of the base. Low alluvial plains and fans comprise most of the western part of the base. This unit is generally flat to gently rolling and is composed of alluvial deposits of mainly Pleistocene age. Unlike the river flood plains and channels, little or no deposition is taking place on this surface and, consequently, a mature soil profile has developed, which contains cemented sediments in many locations.

Dissected uplands form the eastern edge of the Great Valley, and comprise most of the central portion of Beale AFB. This unit ranges from gently rolling land to dissected hills, with relief of up to several hundred feet. Dissected uplands are composed of unconsolidated to semiconsolidated continental deposits of mainly Pleistocene and Pliocene age (Poland and Evenson, 1966). This surface is being eroded at the present time.

Moving eastward into the foothills of the Sierra Nevada at Beale AFB, the topography gets progressively steeper, and outcrops consist of mostly older consolidated sedimentary rocks of Oligocene to Pliocene age. On the eastern boundary of the base

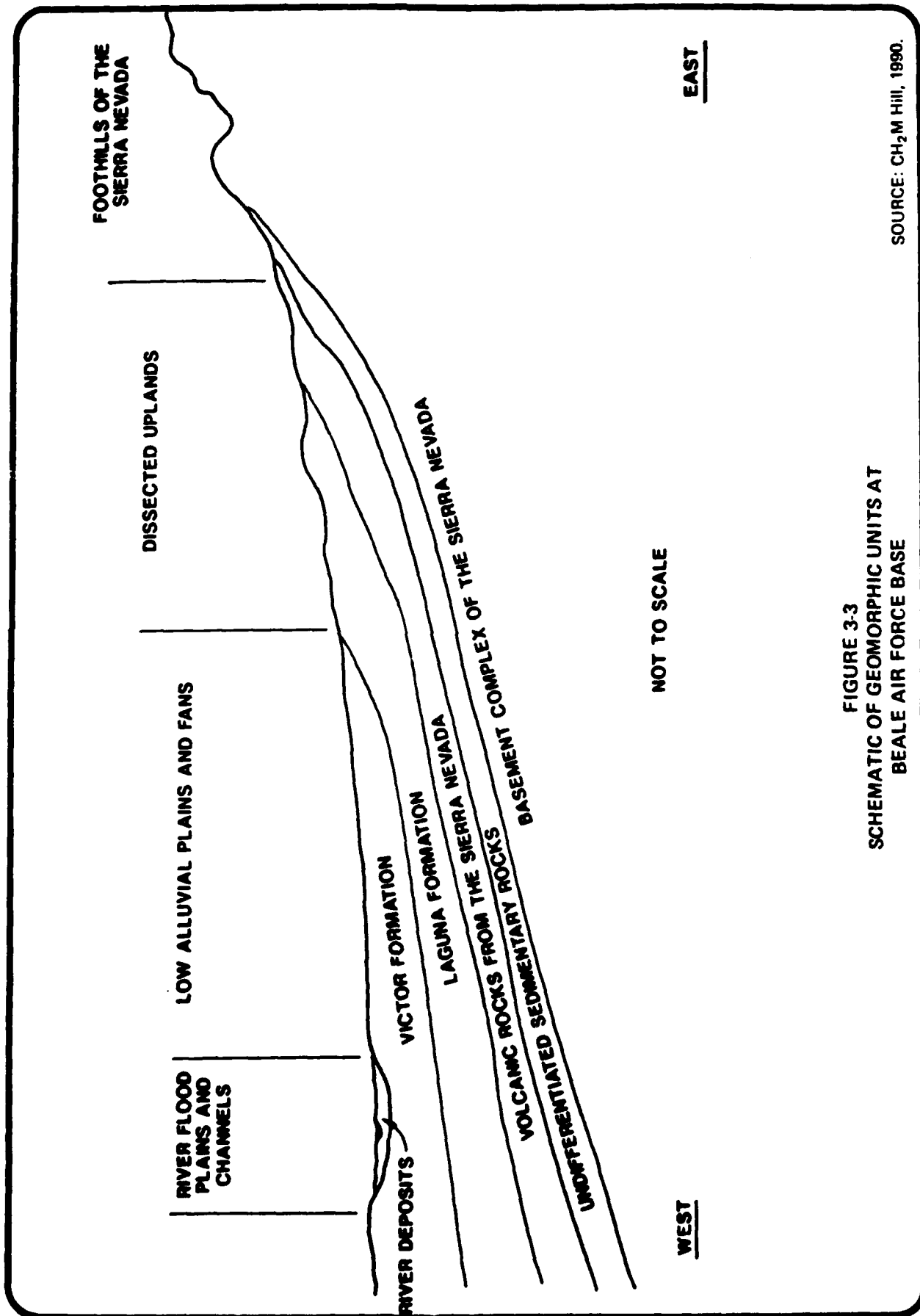


FIGURE 3-3
SCHEMATIC OF GEOMORPHIC UNITS AT
BEALE AIR FORCE BASE

SOURCE: CH₂M Hill, 1990.

are exposures of the crystalline basement rock of the Sierra Nevada, which range in age from Mesozoic to Paleozoic.

3.2.3 Seismic Activity

The most recent seismic activity in the vicinity of Beale AFB was the minor movement that occurred along the Cleveland Hill Fault about 25 miles north of the base and accompanied the 1975 Oroville earthquake sequence. Other mapped faults in the area include the Highway 49 lineament about 20 miles east of Beale AFB and a shear zone, located a few miles east of the base, that trends in a northwesterly direction. There are no known active or inactive faults within the boundaries of Beale AFB (Black and Veatch, 1985).

3.2.4 Soils

Soils at Beale AFB have been recently mapped by the United States Department of Agriculture (USDA), Soil Conservation Service (SCS, 1985). The formation of soil at a particular location is controlled by the geology, landforms, relief, climate, and vegetation at that location. The resulting characteristics of a particular soil, such as its texture, permeability, and mineralogy, may affect the movement of groundwater. Detailed soil maps, profile descriptions, and tables of engineering properties may be found in the Soil Survey (SCS, 1985).

Much of the western portion of the base is covered by San Joaquin loam. This is a moderately deep, moderately well-drained soil formed on old alluvial terraces at an elevation of between 60 and 130 feet National Geodetic Vertical Datum. San Joaquin loam typically contains a layer of hardpan at a depth of between 20 and 40 inches. The infiltration rate is moderate (0.6 to 2.0 inches per hour) above about 16 inches in silt and silty clay, and very slow (less than 0.06 inches per hour) below this depth in clay.

Redding-Corning gravelly loams cover most of the central part of the base, including the flightline and cantonment areas. These soils are moderately deep to very deep and are well-drained. They form on old alluvial terraces at an elevation of between 110 and 250 feet. A layer of hardpan is commonly found at a depth of between 20 and 40 inches. The infiltration rate is moderate (0.6 to 2.0 inches per hour) in the upper 2 feet in clayey and silty sands and gravels. Below this depth, the permeability is very slow in clays.

Pardee-Pardee Variant complex and Pardee gravelly loam covers much of the northeastern part of the base. These are shallow, well-drained soils formed in gravelly and cobbly alluvium on old, dissected alluvial terraces above unrelated igneous bedrock at an elevation of between 120 and 250 feet. The infiltration rates of the soils are moderately slow to moderate (0.2 to 2.0 inches per hour) in silty and clayey sands and gravels.

On the northeastern edge of the base in the foothills between elevations of about 125 and 1,100 feet are Auburn-Argonaut loams. These soils are shallow to moderately deep and well-drained, formed in residuum from basic metavolcanic rock.

Bedrock may be found at depths of 10 to 40 inches beneath the Auburn-Argonaut loams. Infiltration rates range from very slow to moderate (less than 0.06 to 2.0 inches per hour) in silts and clays.

Perkins loam and Conejo loam are found along the drainages at Beale AFB. These are very deep, well-drained soils formed on stream terraces in alluvium derived from mixed sources. Perkins loam tends to be found along the upper reaches of the drainages. Its permeability is moderately slow (0.6 to 2.0 inches per hour), and it is composed of silts and clays, with some silty and clayey gravel below about 5 feet in depth. Conejo loam is normally found in the lower reaches of the drainage courses. This soil shows a moderate infiltration rate (0.2 to 2.0 inches per hour) in silts and clays.

3.3 AIR QUALITY

3.3.1 Climate

The regional climate of Beale AFB is controlled by its interior valley location between the Coastal Range and the Sierra Nevada mountains. Because of its inland location, the valley experiences warm summers and cool winters. Pacific storms migrating across California contribute to most of the annual rainfall that occurs between November and April. The average annual daily maximum temperature is 73 degrees Fahrenheit (F), while the average daily minimum is 47 degrees F. Snow falls on occasion in the Sacramento Valley. Relative humidity is variable and the area experiences approximately 34 days of fog annually (Ruffner, 1985).

The prevailing wind direction at Beale AFB is southwest, and averages 5.6 miles per hour (mph) during the summer and 5.5 mph during the winter. The annual average wind speed is 5.6 mph (CARB, 1984). Atmospheric temperature inversions (air temperature increasing with height) are common in the region, creating a capping effect and holding air pollution near the surface. These inversions occur particularly during the late evening and early morning hours, and break down during the day due to surface convective heating and atmospheric mixing. During the summer, the base of these inversions is usually between 800 and 1,000 feet during the morning, and lifts to approximately 6,000 feet above ground level by afternoon. During the winter, the base of the morning inversion is approximately 1,200 feet, but lifts only to 3,000 feet by afternoon due to weaker surface convective heating (Holyworth, 1972). An analysis of 5 years of meteorological data from the Sacramento Executive Airport showed that stable conditions exist approximately 75 percent of the time.

3.3.2 Air Resources

Beale AFB is located in southern Yuba County and occupies portions of the Sacramento Valley and Mountain Counties Air Basins for which the California Air Resources Board (CARB) reports ambient air quality data. No air monitoring stations are located on the base. The closest air monitoring stations reporting to the CARB are Auburn, Yuba City, Pleasant Grove, and North Highlands. These stations monitor ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), and 10-micron or less particulate matter (PM_{10}). The Auburn monitor, located

approximately 16 miles southeast of Beale AFB, monitors O_3 and PM_{10} . The Pleasant Grove station is situated approximately 20 miles south of Beale AFB and monitors O_3 ; and the North Highlands monitor is approximately 5 miles south of the Pleasant Grove station and samples SO_2 , O_3 , CO, and NO_2 . Air quality background concentrations for 1985 through 1987 collected at these stations are presented in Table 3-2.

Maximum background air quality data from the above-mentioned table are compared to National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) in Table 3-3. This table shows that State and Federal 1-hour O_3 standards and State 24-hour PM_{10} standards were exceeded at least once within the 1985-1987 collection period.

The United States Environmental Protection Agency (EPA) has designated Yuba County an attainment area for all pollutants except O_3 . An attainment area is a region or air basin in which monitored air quality levels are in compliance with the NAAQS. In addition, the background data listed in Tables 3-2 and 3-3 shows that the 24-hour PM_{10} CAAQS standard of $50 \mu g/m^3$ was violated at the Yuba City station in Sutter County at least once during the 1985-87 sampling period.

CARB also reports the average daily air emissions for air basins and counties based on information provided to them by each Air Pollution Control District. This information for Yuba County for 1983 (the most current available) is presented in Appendix A. Sources of emissions are presented by category. In this inventory, aircraft operating from Beale AFB are categorized under Other Mobile Sources as Aircraft-Government. This category of sources contributed less than 6 percent of the total organic gases, 7 percent of the reactive organic gases, slightly more than 2 percent of the carbon monoxide, and less than 5 percent of the oxides of nitrogen emitted county-wide.

A complete air emissions inventory reflecting current base operations (stationary sources and aircraft) is not available (Personal Communication, Capt. Sherman, Beale AFB). The Yuba County Air Pollution Control District has issued a facility-wide permit for most stationary source emissions at Beale AFB. The permitted equipment includes the following: five paint shops and paint spray booths; six degreaser and solvent tanks; 31 fuel storage tanks and 50 tank trucks; two incinerators; 157 boilers, furnaces, and hot water heaters; 132 pieces of aviation ground equipment on the flightline; 64 power generators at the power production shop; and 66 generators elsewhere on base. The cumulative air emissions from these sources are permitted at the following levels: 70 tons per year total hydrocarbons, 100 tons per year NO_x , 22 tons per year SO_x , 3.7 tons per year PM_{10} , and 73 tons per years CO. These do not, however, reflect the total composition of base operating emissions because permitted sources contribute only part of the total operating emissions.

Existing aircraft emissions at Beale AFB have been compiled by HQ SAC using the Aircraft Engine Emissions Estimator, November 1985. The number of flight operations per month per aircraft type were input to determine the amount of emissions produced. The inventory excludes transient aircraft that had less than one operation per month. Data to determine emissions from U-2 aircraft are classified

TABLE 3-2

Summary of Relevant Air Quality Data
Surrounding Beale Air Force Base
1985-1987

Station	Year	O ₃ (ug/m ³)			SO ₂ (ug/m ³)			CO (ug/m ³)			NO ₂ (ug/m ³)			PM ₁₀ (ug/m ³)		
		1 Hour	Annual	1 Hour	3 Hour ¹	24 Hour	Annual	1 Hour	8 Hour	1 Hour	1 Hour	Annual	24 Hour	Annual	24 Hour	Annual
Auburn	1985	280	74													
	1986	340	78													
	1987	360	83													
Yuba City	1985	220	60										78	36.2		
	1986	280	60										98	32.7		
	1987	240	70										86	34.9		
Pleasant Grove	1985	240	60													
	1986	280	56													
	1987	280	60													
North Highlands Blackfoot	1985	360	48	27	24	21	0	11,676	7,356	173	173	27				
	1986	320	56	27	24	19	0	11,676	7,356	173	173	27				
	1987	280	54					10,509	8,524	191 ²	191 ²	42 ²				

ug/m³ = micrograms per cubic meter.

¹Estimated as 90 percent of 1 hour measured concentration (EPA, 1977).

²North Highlands station ceased monitoring NO₂ in 1987. These measurements were taken from the Citrus Heights, Sunrise Boulevard Monitoring Station (approximately 25 miles south of Beale Air Force Base).

Source: CARB, 1985, 1986, 1987.

TABLE 3-3

Maximum Background Air Quality Concentrations
Surrounding Beale Air Force Base
1985-1987

<u>Pollutant</u>	<u>Averaging Period</u>	<u>Maximum Background Concentration (ug/m³)</u>	<u>CAAQS (ug/m³)</u>	<u>NAAQS (ug/m³)</u>
O ₃	1 hour	360	180	240
	Annual	83	-	-
NO ₂	1 hour	194	470	-
	Annual	42	-	100
CO	1 hour	11,700	23,000	40,000
	8 hour	8,520	10,000	10,000
SO ₂	1 hour	27	655	-
	3 hour	24	-	1,300
	24 hour	21	131	365
	Annual	0	-	80
PM ₁₀	24 hour	98	50	150
	Annual	36.2	30	50

ug/m³ = micrograms per cubic meter.
Source: CARB, 1985, 1986, 1987.

and, therefore, unavailable for inclusion in this inventory. Annual emissions in tons per year for aircraft at Beale AFB are presented below.

Carbon Monoxide	2,116 tons/year
Hydrocarbons	839 tons/year
Nitrogen Oxides	399 tons/year
Sulfur Oxides	64 tons/year
Particulates	22 tons/year

3.4 WATER RESOURCES

3.4.1 Groundwater

Groundwater movement in the region has historically been in a direction from the Sierra Nevada foothills eastward to the Feather and Sacramento Rivers. Until the early part of this century, these river systems served as groundwater discharge systems. However, extensive farming and irrigation in the Sacramento Valley area rapidly lowered the water table and altered the direction of groundwater flow, thus changing these rivers from discharge to recharge systems (Aerovironment, 1987).

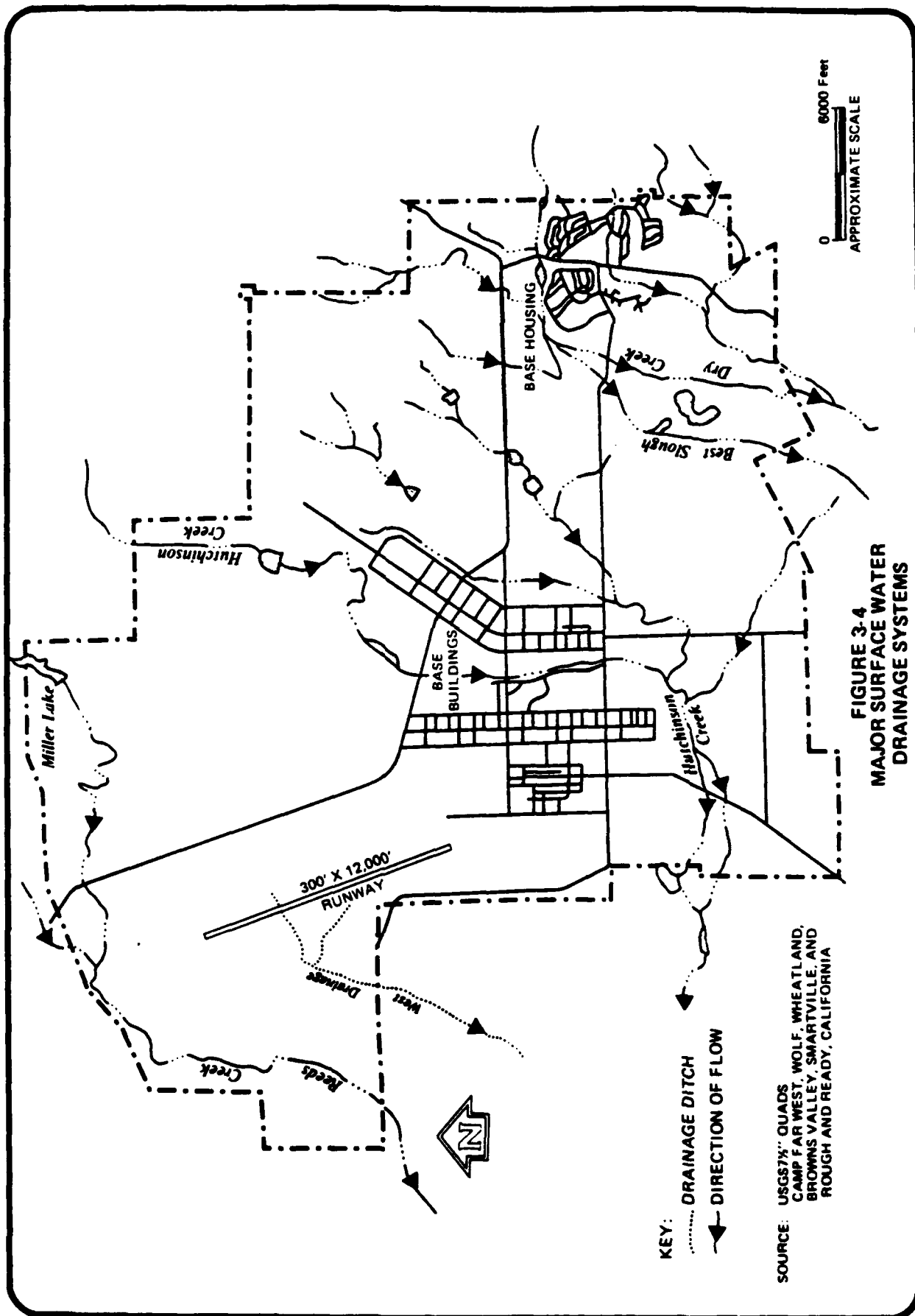
Groundwater generally flows in a westerly/southwesterly direction across the base. The most obvious groundwater characteristic in the area is intense drawdown southwest of the base boundary caused by irrigation pumping. Between 1945 and 1974, the water table fell about 60 feet, then stabilized in the mid-1970s. However, between 1977 and 1980, the water table declined sharply once more in response to drought and increased irrigation for rice production (Aerovironment, 1987). Since 1980, the water level has risen markedly as a result of increased precipitation and lower rice production. Nevertheless, the overall drawdown has been sufficient to alter the direction of local flow in the area of the base well-field from west to nearly south.

It is assumed that groundwater tapped for base use is basically unconfined except where local clay/silt lenses cap the aquifer to produce semiconfined conditions. Fresh water occurs at a depth of between 300 and 500 feet below the surface under most of the base.

3.4.2 Surface Water

Runoff from the base is collected and converged offsite by three principal drainage systems--Dry Creek, Hutchinson Creek, and Reeds Creek. With the exception of Dry Creek, these streams are primarily intermittent (Figure 3-4). Because of impervious soil conditions, lack of topographic relief, and infrequent but sometimes heavy precipitation, the streams in the western portion of the base exhibit wide flood plain areas.

Dry Creek originates to the east of the base and flows to the southwest as Best Slough and Dry Creek, eventually discharging into the Bear River. Hutchinson Creek, which is the largest surface water system on the base, flows mainly southward on base and eventually joins Reeds Creek. Reeds Creek flows mainly westward through the



base and generally parallels the northern base boundary. Reeds Creek and Hutchinson Creek converge before they drain into Plumas Lake southwest of the base.

Both the flightline and the cantonment areas drainage is collected by Hutchinson Creek and its tributaries. Surface runoff from the family housing area is collected by tributaries of Dry Creek.

3.4.3 Water Quality

3.4.3.1 Groundwater

Natural water quality at Beale AFB is generally good, with base water supply wells (Page, 1980) and most monitoring well samples meeting national primary and secondary drinking water standards. Groundwater in the northern part of the base in the vicinity of the flightline is recharged in large part by infiltration from the Yuba River located just north of the base boundary. This groundwater is low in Total Dissolved Solids (TDS) (161 to 233 milligrams per liter [mg/l]) compared to the secondary drinking water standard of 500 mg/l. Nitrate is generally less than 10 mg/l, ranging from 3.4 to 12.5 mg/l. These values are higher than those for pristine groundwater, but lower than those for other areas at Beale AFB and well below the national primary drinking water standard of 45 mg/l. Sulfate levels are all well below the 250 mg/l secondary drinking water standard (CM₂M Hill, 1990).

Groundwater in the central part of Beale AFB is further from river recharge areas. The central area groundwater had higher TDS (260 to 385 mg/l) than in either the north or south areas. Nitrate levels, while still below secondary drinking water standards, were higher than in the north area, possibly because of fertilizer or cattle grazing in the area or irrigation of the golf course with water discharge from the sewage treatment plant (STP). Sulfate ranged from 10 to 65 mg/l, well below the secondary drinking water standard of 250 mg/l (CM₂M Hill, 1990).

Groundwater in the southern part of Beale AFB is recharged largely on base by infiltration from Dry Creek, Best Slough, and Hutchinson Creek; from precipitation east of the base; and to a lesser degree from the Bear River south of the base. TDS generally ranged from 192 to 292 mg/l. Nitrate was higher here than in the north area, possibly related to fertilizer or cattle grazing in the area, and generally ranged from levels too low to be detected to 25 mg/l near the STP. Sulfates generally ranged from 5 to 48 mg/l (CM₂M Hill, 1990).

Water from supply wells at Beale AFB is generally of good chemical quality. However, water from six base water supply wells exceeded the national secondary drinking water standard for manganese of 0.05 mg/l when tested in 1975. Dissolved manganese is objectionable in water because it affects taste, stains plumbing, and accumulates as deposits in distribution systems (Page, 1980). Complaints by water users of discolored water and staining of laundry washed in water with high manganese levels are received approximately once a month. During periods of high demand, the base is forced to use water from the wells known to have high manganese levels. The water distribution system is frequently flushed to remove accumulated deposits

(Personal Communications, Tony Guerrero, Beale AFB, 1990). Manganese is also present in off-base agricultural and water supply wells.

3.4.3.2 Surface Water

Water quality parameters were measured in surface water samples at Beale AFB as part of the IRP Stage 2-1 Remedial Investigation. Results of these analyses and related quality control data are presented in Appendices A and F of that report (CH₂M Hill, 1990). The following discussion is summarized based on these results.

Surface water was sampled within, and at three different tributaries of Hutchinson Creek. TDS varied from 69 to 169 mg/l in the Hutchinson Creek samples. Surface water type varied in Hutchinson Creek ranging from sodium-calcium bicarbonate to magnesium-calcium bicarbonate to sodium-magnesium bicarbonate. Surface water at the west side drainage ditch, which flows to Hutchinson Creek, had TDS of 157 mg/l and was a calcium-sodium bicarbonate type.

Surface water quality was not measured in other drainage systems at Beale AFB; however, it can be assumed to have similar characteristics to those reported for Hutchinson Creek.

3.5 BIOLOGICAL RESOURCES

3.5.1 Vegetative Resources

3.5.1.1 General

Beale AFB contains extensive open space and a variety of vegetation, including annual grassland, freshwater marsh, oak woodland, riparian woodland, and vernal pools. Most of the base is undeveloped, consisting primarily of annual grasslands on gently rolling hills and flats. Freshwater marshes and oak and riparian woodlands are relatively uncommon on the base, especially in areas where SUNT facilities will be located.

Annual grasslands are dominated by a variety of native and introduced grasses, including wild oats, barley, and Italian rye grass. Several spring flowering herbs were also observed, including brodiaea, wild hyacinth, and vetch. Many of the proposed facilities will be in areas where annual grassland vegetation occurs.

Vernal pools are quite extensive throughout the base. They are characterized by shallow water, often less than 1 foot deep, and are typically found in low-lying areas. The vegetation is unique because the plants are adapted to the wet conditions. Many of the proposed facilities will be in areas where vernal pools occur.

The vegetation is unique because the plants are adapted to the wet conditions. Many of the proposed facilities will be in areas where vernal pools occur.

stands in the pool throughout most of the rainy winter season, drowning any grassland species that may have been established before the pool was filled. In the summer, the water evaporates, leaving the pool bed baked hard and dry. This desiccation prevents the establishment of most marsh species. These conditions create a unique habitat that is valuable because of its use by wildlife, especially waterfowl, significance as a unique natural community, and significance as habitat for rare plants and their associated insect faunas. Vernal pools are becoming increasingly rare due to development.

Freshwater marsh vegetation occurs in ponds and ditches that have a relatively permanent supply of water. Marshes at the base contain perennial monocots such as cattail and tule, and scattered trees and shrubs such as willows, cottonwoods, and buttonwillows. Freshwater marsh vegetation intergrades with riparian woodland vegetation in many drainages throughout the base. Riparian woodlands occur along the banks and bottoms of intermittent drainages such as Hutchinson Creek. These woodlands contain a more dense cover of willow, cottonwood, and sycamore trees.

3.5.1.2 Threatened and Endangered Species

No State or Federally listed plant species (threatened or endangered) are known to occur at or near any of the proposed facilities. Many of the vernal pools, however, may contain Federal candidates such as legumere, Red Bluff dwarf rush, and Boggs Lake dodder (Table 3-4).

A visit to Beale AFB to examine vernal pool resources and sensitive plants was conducted by the California Department of Fish and Game (CDFG) in May 1985 (Holland, 1985). Although a suitable habitat for the above listed species was found at the base, no listed plants were observed during this visit. State or Federally listed plants may be present in vernal pools on the base; however, no listed plants are currently known or expected to occur in other wetland or upland habitats on Beale AFB. Exhaustive surveys for rare plants have not been completed throughout the base.

A survey for vernal pools is being conducted by the Nature Conservancy in the western portion of the base. The report on this survey is expected to be completed in August 1990. A botanist affiliated with the Nature Conservancy and the base natural resource coordinator conducted a reconnaissance of an area in the southern portion of the base where the Parasail Area may be located to determine the need for a survey of this area. No vernal pools were found in this area and it was determined that no survey was needed (Personal Communication, Mary Ann Criggs, The Nature Conservancy). However, based on existing information, threatened and endangered species are not expected to be present. The Army Corps of Engineers, which has permitting authority for construction activity in wetlands, will be contacted for permitting requirements before signing of Record of Decision (ROD) and initiating construction activity.

TABLE 3-4
Threatened and Endangered Plant and
Wildlife Species That May Occur in the Vicinity
of Beale AFB, California

	<u>Common Name</u>	<u>Scientific Name</u>	<u>Status¹ Fed/State</u>
Insects	Valley Elderberry longhorn beetle	<u>Desmocerus</u> <u>californicus</u>	FT
Birds	Aleutian Canada goose	<u>Branta canadensis</u> <u>leucopareia</u>	FE/CE
	American peregrine falcon	<u>Falco peregrinus</u> <u>anatum</u>	FE/CE
	Bald eagle	<u>Haliaeetus</u> <u>leucocephalus</u>	FE/CE
	Tricolored black bird	<u>Agelaius Tricolor</u>	C2
Plants	Ahart's dwarf rush	<u>Juncus leiospermus</u> var. <u>arthartii</u>	C1
	Green's legenera	<u>Legenere limosa</u>	C2
	Hairy Orcutt grass	<u>Orcuttia pilosa</u>	C1/CE
	Red Bluff dwarf rush	<u>Juncus leiospermus</u> var. <u>leiospermus</u>	C2

Sources:

Holland, R.F., 1985. Memorandum regarding vernal pools at Beale AFB. California
Department of Fish and Game.
Kobetich, Gail, 1988. Letter regarding endangered species update. U.S. Fish and
Wildlife Service (USFWS), AKT/1-1-88-SP-653.

TABLE 3-4 (cont'd)

'STATUS DEFINITIONS:

FE	=	Federal endangered
FT	=	Federal threatened
C1	=	Federal category 1: Taxa for which USFWS has sufficient biological information to support a proposal to list as endangered or threatened.
C2	=	Federal category 2: Taxa for which existing information may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
CE	=	Listed as endangered in California

3.5.2 Wildlife Resources

3.5.2.1 General

The open space of Beale AFB allows for high numbers of wildlife species. Portions of Dry Creek/Best Slough and Hutchinson Creek support freshwater aquatic life. The most abundant native habitat at the base is the grassland habitat. However, oak woodland, riparian woodland, vernal pool, and freshwater marsh habitats are also found at the base. No oak woodland or riparian woodland habitats that may support wildlife will be affected by the proposed facilities.

Vernal pools and freshwater marshes on the base provide a seasonal habitat for migrating waterfowl and shorebirds and the open grasslands provide a seasonal habitat for raptors. Beale AFB has an ongoing Bird Air Strike Hazard (BASH) program to alleviate the potential for large birds interfering with existing flight operations. This is of particular concern on base in areas west of the runway, where numerous vernal pools, portions of Rock Creek, and other small intermittent drainages have the potential to provide habitat that can support seasonal and migrating bird populations.

Portions of Dry Creek/Best Slough in the vicinity of Beale AFB support a November and December king salmon run. Dry Creek is a perennial stream and is capable of sustaining flows and adequate water quality to support upstream migration of salmon during spawning periods. However, since flow volumes fluctuate with rainfall amounts, the quality of runs can be irregular. The last good run was in 1984 (Personal Communication, John Thomson, Beale AFB, October 1989).

The hilly, more heavily treed, and typically less populated areas in the southeastern portion of Beale AFB are used as a winter grazing range by migratory deer herds. The deer migrate from the lower portions of the Sierra Nevada Mountains in the winter months to areas where grasses are more plentiful and weather less severe. During the hot, dry summer months, these deer herds migrate east to higher elevations where cooler, more suitable habitat exists.

3.5.2.2 Threatened and Endangered Species

No animal or fish species listed as threatened or endangered by the State or Federal government are expected to regularly utilize Beale AFB (Personal Communication, John Thomson, Beale AFB). Several Federally listed bird species could occur at Beale AFB as transients on rare occasions for brief periods of time, including the Aleutian Canada goose, peregrine falcon, and bald eagle (Table 3-4). It has been speculated that the endangered valley elderberry longhorn beetle could occur on the base; however, there are few elderberry trees present to provide suitable habitat. A historic occurrence of tricolored blackbird, a Federal candidate species, is reported on the Yuba River near the northern boundary of Beale AFB.

3.6 ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL RESOURCES

Although Euroamericans may have visited the Beale AFB vicinity as early as 1808, it was not until 1841 that the history of the area was first recorded. The

discovery of gold in California in the late 1840s had miners, merchants, and settlers moving into the Yuba and Bear Rivers region, spurring the growth of mining camps, towns, and settlements. Two settlements, Marysville and Cabbage Patch (renamed Waldo), emerged in the early 1850s on the western and eastern edges of the present-day base boundary. Marysville was developed at the navigation head of the Feather River and as the supply center for the northern mines.

Agriculture and cattle ranching were also influenced by the discovery of gold. Grains, particularly wheat, were grown throughout the Central Valley and the Beale area supported a diversity of produce. Agriculture continued until the U.S. Government condemned 86,000 acres from 150 landowners and created Camp Beale in 1942.

Only small portions of Beale AFB have been intensely surveyed to determine potential archaeological or cultural resources present on base. These include: 1) an extensive survey of a portion of the Dry Creek drainage system in 1960-61 (Miller, 1961); 2) a proposed irrigation project traversing the base in a narrow north-south corridor surveyed in 1981 for the Yuba County Water Agency (Peak, 1981); 3) surveys conducted in 1982 by archaeologists from the U.S. Army Corps of Engineers in anticipation of proposed barracks construction in the cantonment area (Johnson and Kenton, 1982); 4) surveys performed by Peak and Associates in 1983 for portions of the Reeds Creek drainage and a proposed realignment to the west of the existing channel; 5) large portions of the extreme southern portions of the base surveyed in 1987 (Raven, 1987); and 6) ongoing surveys associated with the potential construction of a rail spur through a portion of the north-central area of the base (Maniery, 1989).

To date, a total of 22 archaeological sites has been recorded on the base. Of these 22 recorded sites, nine are prehistoric, eight relate to historic domestic activities, three are bridges, one relates to mining, and one relates to military activities. Most of the sites are discussed in detail by Raven (1987). Several additional sites have been identified by a privately funded study (Maniery, 1989). Table B-1 in Appendix B summarizes the known archaeological sites on the base and indicates whether they fall within the area of potential effect of the present project. This table indicates that two sites on the base have been determined eligible for the National Register, two sites have been recommended as eligible, six sites have been recommended as not eligible, and twelve sites are of undetermined eligibility. Appendix B includes a discussion of the two sites eligible for listing on the National Register.

In addition to the archaeological sites, 108 historic locations on the base have been identified through archival research. Most of these are (or were) structures, but roads, trails, mining ditches, and a cemetery are also identified. Table B-2 in Appendix B summarizes these historic locations.

Archaeological sensitivity for the base has been presented by Raven (1987). This sensitivity analysis provides information on the potential occurrence of archaeological sites on portions of the base that have never been surveyed by an archaeologist. For prehistoric resources, five zones were identified--each zone is expected to contain certain types and densities of resources based on previous surveys

near the base. Sensitivity for historic resources was based on historic documents and is discussed above.

The sensitivity zones for prehistoric resources (Figure B-1 in Appendix B) were delineated on the basis of physiographic characteristics believed to influence prehistoric activities and, in turn, the occurrence of certain types of remains. Descriptions of the zones also appear in Appendix B.

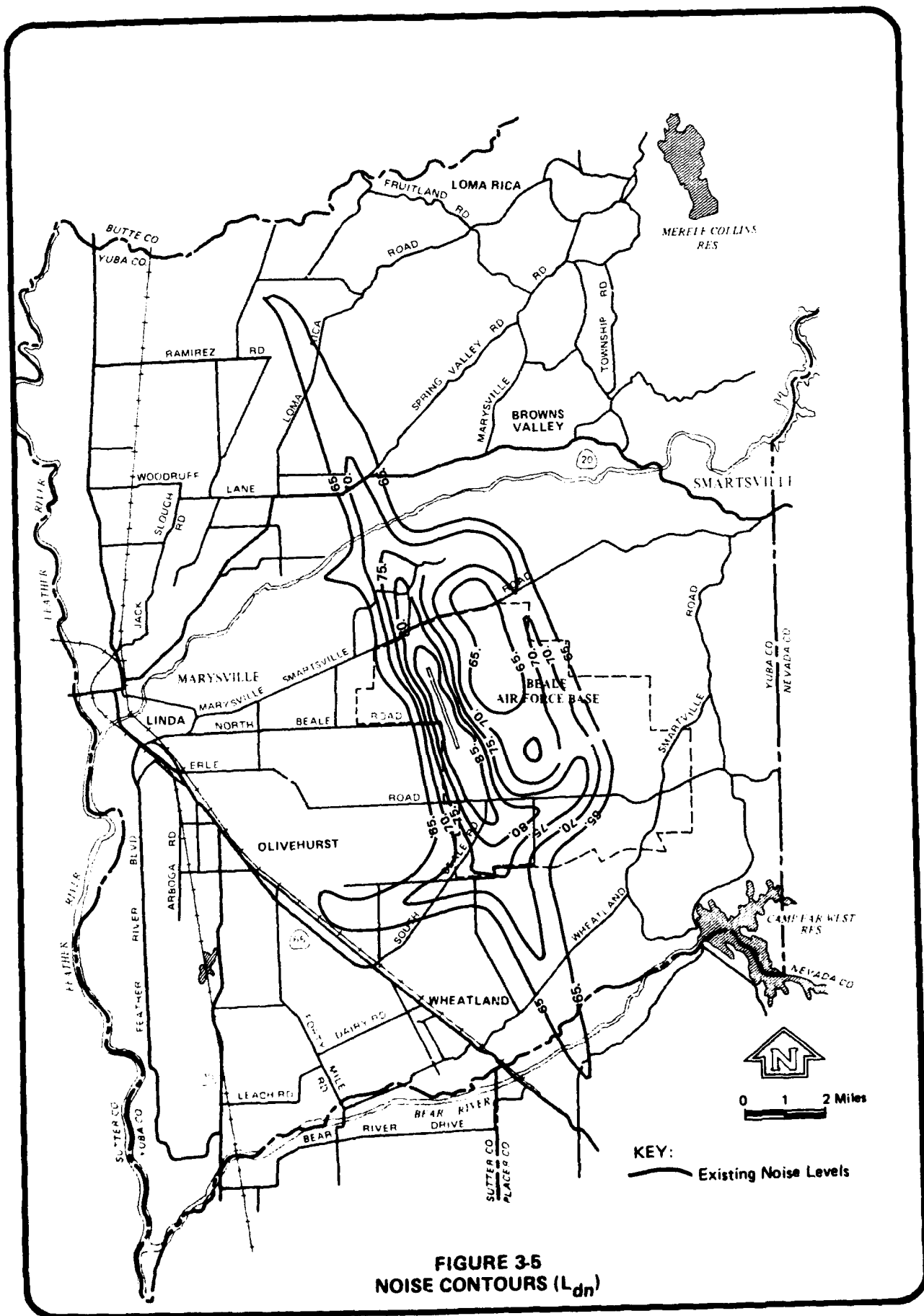
3.7 NOISE

Aircraft operations at Beale AFB produce noise, which results in both direct effects (annoyance, health effects, and impact on domestic animals) and indirect effects (land use) to the surrounding community. Ground noise levels generated by aircraft activity at Beale AFB are estimated using the NOISEMAP computer program (Beckmann and Seidman, 1978). NOISEMAP results are expressed in terms of average day/night sound levels (L_{dn}) using decibels (dB) on an A-weighted scale as units. The A-scale gives a good approximation of the human ear's response to noise and also correlates well with a person's judgement of the loudness of a noise event (EPA, 1974). L_{dn} values are used by the Environmental Protection Agency (EPA), U.S. Department of Housing and Urban Development (HUD), and the DOD to describe noise exposure. In calculating L_{dn} levels, noises that occur between 2200 hours and 0700 hours are penalized by adding 10 dB to their actual noise levels. This penalty accounts for the fact that noises occurring at night are usually judged to be more annoying than those occurring during the day. A more detailed description of the noise metrics used in this analysis is given in Appendix C.

The noise levels estimated by NOISEMAP are based on the flight parameters of the aircraft, including the engine type, altitude, and throttle setting, and on the aircraft type, flight path, and profile utilization. These input data were gathered in 1989. The data were in turn entered into a central computer at the Air Force Engineering Services Center at Tyndale AFB, Florida. The NOISEMAP program calculates L_{dn} values in decibels and plots a map of the noise "footprints" or contours. Noise contours are plotted with a minimum L_{dn} value of 65 dB because studies have determined that the percentage of persons highly annoyed by noise exposure increases rapidly above this level. Also, HUD has adopted a L_{dn} value of 65 dB as the upper limit of acceptable noise for residential development and the FAA uses a L_{dn} value of 65 dB to define residential noise impact areas around airports. Documentation on the NOISEMAP program is located in Appendix C.

3.7.1 Existing Noise Conditions

Noise contours for Beale AFB are based on the average busy day, existing and planned future peacetime levels of activity and the assumption that future military aircraft will not be noisier than existing military aircraft. Figure 3-5 presents L_{dn} noise contours at Beale AFB under current operations. The noise contours shown in Figure 3-5 take into account the recent deactivation of the SR-71 program at the base.



Noise complaints received by Beale AFB in 1988 were overwhelmingly attributed to sonic booms caused by SR-71 aircraft. It was estimated that 95 percent of the 217 complaints in that year were of noise related to that aircraft. (USAF, HQ SAC, 1990).

Air traffic patterns for Beale AFB are established according to Air Force directives, with safety and noise abatement considerations foremost. When flights over populated areas cannot be avoided, procedures are established to minimize the inconvenience to those living in the affected areas. Prevailing winds are from the south about 90 percent of the time; thus, the majority of takeoffs are toward the south. The majority of the flying activity takes place east of the airfield and is regulated to a southeasterly flow. This means that most takeoffs are toward sparsely populated rural areas in Yuba and Placer Counties. The northern patterns also fly over sparsely populated areas.

Flying operations at Beale AFB are evaluated continuously to maintain noise levels at a minimum. Practice takeoffs and landings and instrument approaches are normally conducted at times when people are not sleeping, and usually are not scheduled between 2200 and 0600 hours. During evening hours, only mission-essential aircraft arrivals and departures occur. Also, traffic patterns are located away from population centers, and normal runup activities are not performed after 2200 hours or before 0600 hours. Engine runup locations have been established in areas of minimized noise exposure for people on the base, as well as those in the surrounding community. Blast deflectors are used to reduce noise where the runup blast is directed toward the base boundary. Normal base operations do not include nighttime runups, but heavy workloads or unforeseen contingencies sometimes require a limited number of nighttime engine runups.

3.8 LAND USES

Beale AFB is located entirely within the boundaries of Yuba County. Approximately 74 percent of the land area in the county is dedicated to farming and grazing (EDAW, 1988; Cal DOF, 1988). The land bordering the base is primarily agricultural. A Comprehensive Land Use Plan (CLUP) for Beale AFB was prepared by the Sacramento Area Council of Governments (SACOG, 1987), acting as the regional Airport Land Use Commission under authority of the Airport Land Use Commission Law (Article 3.5, California Public Utilities Code). The CLUP characterizes the existing land uses around the base as mostly agricultural lands supporting irrigated crops, such as rice, alfalfa, safflower, and corn; and deciduous trees that produce peaches, prunes, and almonds, or rural residential mixed with open space recreation areas. In addition to adjacent agricultural lands, extractive mineral operations occur to the north of the base adjacent to the Yuba River in an area known as the Yuba Gold Fields.

SACOG considers the existing land uses around the base to be consistent with the CLUP, which is based on flight safety, ground safety, and noise criteria. The plan was prepared to protect Beale AFB from incompatible uses of neighboring land; provide for the orderly growth of the area surrounding the base; safeguard the general welfare of the inhabitants within the vicinity of the airport and the general public against adverse effects of aircraft noise; reduce the number of people exposed to

airport related hazards; and ensure that no structures affect navigable air space. Planned land uses in the vicinity of the base, as described in the Yuba County General Plan, are characterized as being generally consistent with the CLUP.

The maximum exterior noise exposure of noise-sensitive land uses should not exceed an L_{50} level of 65 dB under the noise criteria contained in the CLUP. A range of acceptable noise levels for land uses that are not noise-sensitive has also been established. Appendix C provides more detail on noise.

3.8.1 Accident Potential

The base has one runway, which is 12,000 feet long and 300 feet wide. There are asphalt overruns of 1,000 feet on the south and 2,250 feet on the north. The runway is capable of handling any aircraft in the Air Force inventory.

The Air Force maintains 3,000-foot by 3,000-foot Clear Zones (CZ) at each end of the runway because of the high accident potential in these areas. Within the CZ, land use restrictions prohibit economic use of the land. Accident Potential Zones (APZ) are less critical than the CZ, but still possess potential for accidents. APZ I are 3,000 feet by 5,000 feet areas adjacent to the Clear Zones. APZ II are 3,000 by 7,000 feet areas adjacent to APZ I. These three zones (CZ, APZ I, and APZ II) combine to form an area that extends to 15,000 feet from the runway threshold.

The Air Force controls activity in the Clear Zones. Through the Air Installation Compatible Use Zone (AICUZ) program, the Air Force provides guidelines on compatible land use within APZs to local agencies. (USAF, 1984). A 1,000-foot Safety Zone on each side of the runway center line, a 200-foot Safety Zone from the center of each taxiway, and a 125-foot minimum Safety Zone from outside the aprons are also maintained. No incompatible land use is reported within the CZ, APZ I, or APZ II at Beale AFB (USAF, 1984).

3.8.2 Height and Obstruction Criteria

In addition to accident potential and noise, the AICUZ plan also addresses height and obstruction criteria for areas in the vicinity of airfields. These criteria, established by the USAF and FAA, are concerned with the following land use activities: release into the air of any substances that would impair visibility or otherwise interfere with pilot vision; production of electrical emissions that would interfere with aircraft communication and navigation systems; attraction of birds or waterfowl; and placement of any type of natural or artificial object at a location and height that would interfere with approaches and departures of aircraft. The State of California prohibits construction of any structure that constitutes a hazard to air navigation (unless the California Department of Transportation issues a permit). These obstruction criteria have also been incorporated into the zoning laws of Yuba County.

3.9 TRANSPORTATION

In December 1987, a traffic study of Beale AFB was conducted as part of an effort to revise the Base Comprehensive Plan. Most of the quantifiable information

about transportation conditions on and around the base is drawn from this study and, therefore, reflects specific conditions in December 1987.

3.9.1 Access

There are five gates providing access to Beale AFB--the Main Gate on the west, Doolittle and Grass Valley Gates on the north, and Wheatland and Vasser Gates on the south. Travel to and from the base occurs on a combination of State highways and county roads, including State Highways 65 and 70, State Route 20, North Beale Road, South Beale Road, Marysville Smartsville Road, and Spencerville Road. The locations of the gates and roads are indicated on Figure 3-6. The relatively low traffic volumes on all except North Beale Road make it difficult for the access routes to become high priorities for upgrading by the county. Daily traffic counts on or adjacent to the access roads range from 850 on South Beale to 6,150 on North Beale Road.

Traffic counts at each gate during morning and afternoon peak periods are presented in Table 3-5. The Main and Doolittle Gates are the busiest while the Grass Valley Gate is the least busy during these peak periods. Doolittle Gate has the highest peak hour traffic (520 vehicles) and the highest 15-minute inbound traffic flow observed (192 vehicles). Backups of traffic occur there due to uneven distribution of arrivals and security checks of some cars.

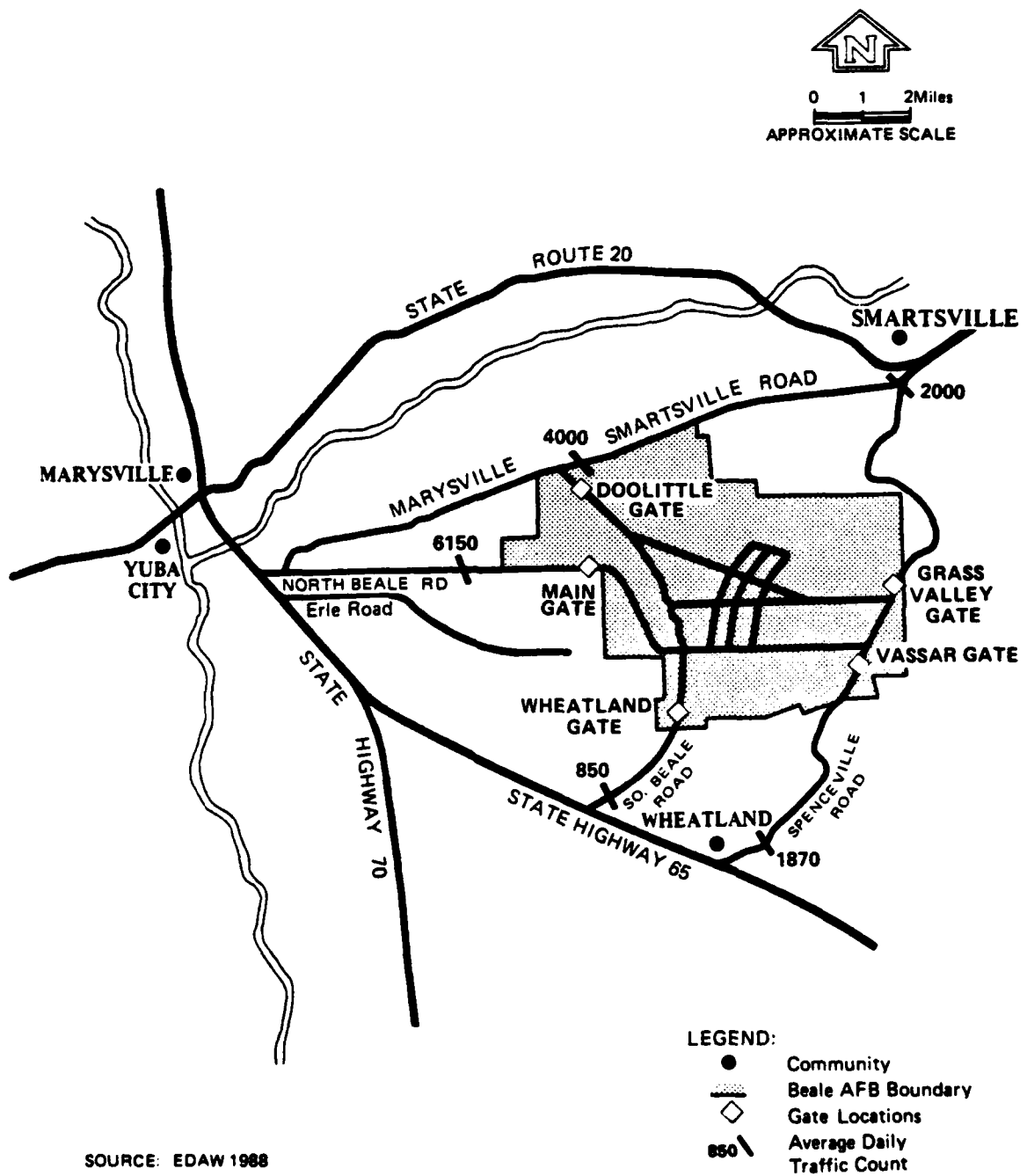
Vehicle traffic to and from the base is generated by five major user groups: (1) military personnel residing off base; (2) civilian employees working on base; (3) retired military personnel; (4) commercial traffic; and (5) visitors. Visitors generally use the Main Gate since it is always open and is the closest gate to the major urban center in the area. Commercial truck traffic generally arrives from the south and favors either Wheatland or Main Gates. Military personnel residing off-base, civilian employees, and military retirees use all of the gates. Their choice depends on their off-base location and on-base destination.

3.9.2 On-Base Roads

The road system on the base consists entirely of two-lane roadways. Capacity problems can result at intersections where significant left-turn movements occur on either minor or major streets. No left-turn lanes have been created to reduce such delays. At four locations, an auxiliary lane has been added on the outside of the roadway to enable through-traffic to maneuver to the right and pass traffic waiting to turn left. They are located on Gavin Mandery at intersections with A, C, and J Streets, and on Warren Shingle at the hospital entrance.

The ability of a road system to accommodate traffic demand in built-up areas typically is governed by the capacity of its intersections. Traffic exceeds intersection capacity on at least one approach per day at six intersections. All instances of capacity exceedance are for left turns or for through-movement on minor streets.

Four major base parking lots were analyzed as input to the development of the Base Comprehensive Plan (EDAW, 1988); two in the cantonment area (the Commissary and Base Exchange lots), and two in the flightline area on either side of



**FIGURE 3-6
BASE ACCESS**

TABLE 3-5
Gate Traffic Volumes at Beale AFB

	Gates					Total
	Main Gate	Doolittle Gate	Yassar Gate	Grass Valley Gate	Wheatland Gate	
Morning Peak Period Traffic						
Peak Period (0600 to 0900)						
Volume	900	742	264	146	424	2,476
Percent of Volume for all Gates	36	30	11	6	17	100
Peak Hour						
Time of Occurrence	0630 to 0730	0630 to 0730	0715 to 0815	0630 to 0730	0630 to 0730	
Volume	385	520	126	74	239	1,344
Percent of Volume for all Gates	29	39	9	5	18	100
Percent Inbound at Each Gate	86	92	57	93	96	91
Peak Hour as Percent of Peak Period at Each Gate	43	70	48	51	56	54
Afternoon Peak Period Traffic						
Peak Period (1500 to 1800)						
Volume	1,300	819	297	176	405	2,997
Percent of Volume for all Gates	43	27	10	6	14	100
Peak Hour						
Time of Occurrence	1600 to 1700	1545 to 1645	1700 to 1800	1545 to 1645	1600 to 1700	
Volume	544	455	109	80	174	1,362
Percent of Volume for all Gates	40	33	8	6	13	100
Percent Inbound at Each Gate	76	90	50	93	90	81
Peak Hour as Percent of Peak Period at Each Gate	42	56	37	46	43	46

Source: EDAP 1988
Note: Data collected on Thursday, 3 December, 1987.

Douglas Road (Douglas Road north and south). Table 3-6 presents information on the use of these lots. Based on the information in this table, the Douglas Road southern lot is slightly over capacity in the morning, apparently due to user preference for this lot over the northern lot. Other than this, adequate parking exists in these two areas of the base.

3.9.3 Bus Operations

The base operates a shuttle bus from 0600 to 1700 hours for the primary purpose of providing transportation to work locations for military personnel without personal transportation. Military dependents are able to ride on a space-available basis. The local public transit system, Hub Area Transit System, operates a route between Beale AFB and Marysville during the summer to serve an employment training program. Bus occupancy on this route was not great enough to justify year-round service.

3.9.4 Railroad

The base railroad service, an extension of commercial tracks, enters the base on the east side of South Beale Road and terminates in a switching yard east of J Street between 6th Street (Gavin Mandery) and 14th Street (Warren Shingle). The service's primary function is to transport aviation fuel to the storage tanks located in this area, but occasional munitions shipments are also handled. Fuel deliveries are made three days a week. A minimum of eight locomotive trips across Gavin Mandery are required for each fuel delivery. For large deliveries, an additional eight locomotive movements are required.

3.10 UTILITIES

3.10.1 Electric Supply

Electric service is provided to Beale AFB at 60 kilovolts (kV) from the Westerr Area Power Administration and transmitted from their facilities over Pacific Gas & Electric (PG&E) lines to Grass Valley Substation. The base then distributes 60 kV to a number of substations on base where the voltage is stepped down to 12 kV and distributed. The electrical system is considered extremely reliable, with only one to two short duration outages per year (PAT, 1989).

3.10.2 Water Supply

The water distribution system at Beale AFB originates at the wellfield located on base approximately 1 mile east of the Main Gate (Figure 3-7). The field is composed of nine active wells whose collective capacities are approximately 5,550 gallons per minute (gpm) or 8 million gallons per day (mgd). Water from the wells is disinfected with chlorine and fluorine and then pumped through an 18-inch transmission line to the main line booster station south of the flightline area. This transmission line is an approximately 50-year old spiral well casing, and is suffering corrosion failure. It is programmed for replacement as an action separate from the realignment. From the main booster station, water is pumped to a 250,000-gallon

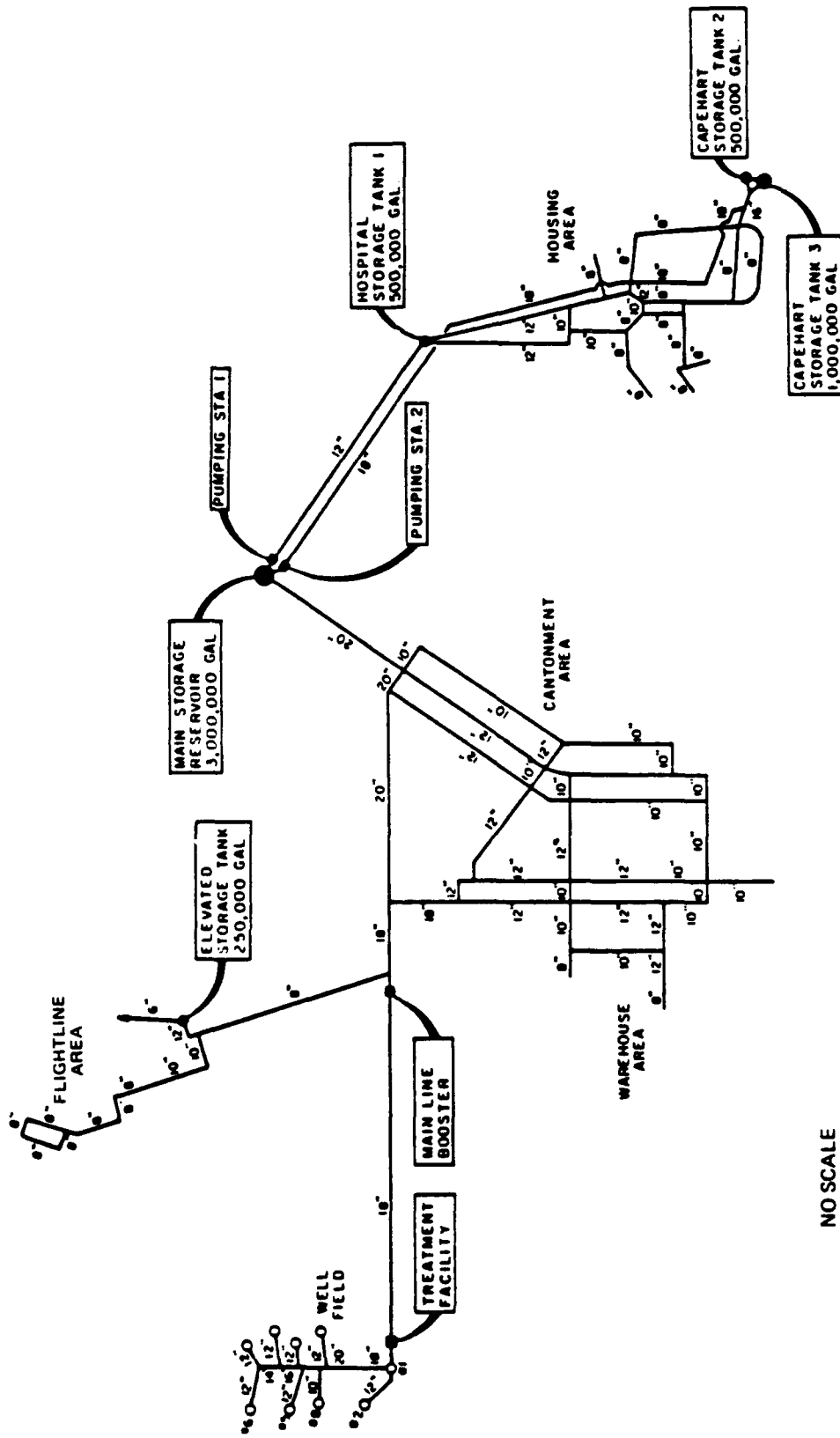
TABLE 3-6

Utilization of Major Base Parking Lots

<u>Lot</u>	<u>Available Spaces</u>	<u>Weekday Time</u>	<u>Spaces Filled</u>	<u>Percent Filled</u>
Commissary	225	1100 1700	187 152	83 68
Base Exchange	272	1100 1700	152 43	56 16
Douglas Road North	318	1000 1400	151 132	48 42
Douglas Road South	276	1000 1400	280 237	101 86
TOTAL	1091	Morning Afternoon	770 564	71 52

Source: EDAW 1988.

Note: Data collected in December 1987.



NO SCALE

SOURCE: EDW 1988

FIGURE 3-7
WATER DISTRIBUTION SYSTEM

elevated storage tank located near the flightline area, and to the 3,000,000-gallon main storage reservoir northeast of the cantonment area that feeds three other separate storage facilities. Total water storage capacity for the base is 5.2 million gallons.

The water supply is adequate to meet present and future needs; however, the water treatment and distribution system will need some improvement (PAT, 1989). Current groundwater usage at Beale AFB varies from 2.5 mgd in the winter to 6.0 mgd in the summer; the large variation in usage is due to high irrigation demand in the dry months. These usage figures are assuming an average daily base population of approximately 10,000 people, including military personnel, dependents, civilian workers, base contract personnel, retired personnel taking advantage of base facilities, and other visitors (Personal Communication, Mr. Tony Guerrero, Manager, Water Treatment and Water Supply, Beale, AFB, 1989).

The water supply to the housing area is adequate to meet substantial growth, but additional delivery demands will probably require additional and backup booster pumps. The water supply and delivery system in the cantonment area is adequate to meet present and future needs. The water supply to the flightline area is also adequate.

The water treatment includes injection of chlorine and fluoride. The water is not filtered at the well pump station, however, some wells are equipped with sand separators. The base consumes approximately 2 mgd during the winter months and up to 6.5 mgd in the summer months. The estimated capacity of the well field is 8 mgd. There is no treatment for manganese levels (see Section 3.4.3.1). In addition to the distribution system on base, reclaimed water from the wastewater treatment plant is pumped to the golf course for irrigation through a separate water line.

3.10.3 Communication

Commercial communications services are provided to the base by Pacific Bell and the American Telephone and Telegraph Company. The existing base communication system is at absolute maximum capacity and the 1883rd Communication Squadron is presently evaluating proposals for completely replacing the existing system with a new Base Information Digital Distribution System (BIDDS). The BIDDS will include a fiber optic cable system and a digital switch that will support a complete state-of-the-art communications system and will ultimately allow complete computer networking. The BIDDS will ultimately have the capacity to serve the present base load, the relocated SUNT load, and have spare capacity for 5 to 10 years projected growth. The new BIDDS will be government-owned, contractor installed and contractor maintained (PAT, 1989). It is anticipated that the BIDDS System will be installed and operational prior to the end of FY 1993 when the SUNT becomes fully operational at Beale AFB.

3.11 WASTE MANAGEMENT

3.11.1 Solid Waste Disposal

Solid waste from base operations and households is disposed of in a sanitary landfill located on the southern portion of the base, between the cantonment area and the family housing area. Vehicles enter the landfill from Gavin Mandery Road. This landfill, occupying about 40 acres, has been in use since 1981, and is permitted by the State as a Class III (nonhazardous) landfill. The landfill has an estimated total capacity of approximately 3,795,000 cubic yards (cy), of which approximately 845,000 cy are used. The current usage rate is approximately 5,219 cy per month or 62,628 cy per year. At this current rate of use, the landfill has an estimated remaining lifetime of 35 to 40 years (Personal Communication, Mr. Greg Miller, Beale AFB, September, 1989).

Waste deposited there is primarily general refuse. Landfill operations consist of trench method disposal, and water runoff and runoff controls are present. Management practices include no chemical disposal and daily coverage of the waste. A landfill study has been accomplished under the Installation Restoration Program that complied with the California Solid Waste Assessment test. The results of this study indicate that no groundwater contamination or contaminated leachate emanated from the landfill (Aerovironment, 1987).

3.11.2 Wastewater Disposal

The sanitary sewer system at Beale AFB is primarily a gravity flow system. However, two lift stations are required to pump flightline wastewater up a slight grade to the STP located in the southwestern portion of the base. The STP is designed to treat 3.0 mgd, and currently receives an average of approximately 1.0 mgd.

The sanitary sewer system services the three main areas of the base, the family housing area (including the Hospital and PAVE PAWS), the cantonment area, and the flightline area. Approximately 97 percent of the flow entering the STP originates from the three areas. The remaining 3 percent of the flow is from the Precision Photo Lab.

The waste generated at the Precision Photo Lab is collected in a wet well and pumped through an 8-inch underground line to a neutralizer basin at the Photo Water Treatment Plant. Currently, the Photo Water Treatment Plant is not operational, only the existing basin is used to adjust the pH of the photowaste prior to being discharged. Discharge from the neutralizer basin combines with sanitary wastewater prior to entering the STP. The effluent from the STP discharges at a NPDES regulated point to Hutchinson Creek.

A cease-and-desist order (No. 88-092) was issued by the CRWQCB on June 1, 1988. The base has been in violation of the discharge limitations stated by the NPDES permit for boron and cyanide in the effluent along with a foaming problem upon discharge to Hutchinson Creek. The Air Force Occupational and Environmental Health Laboratory identified photo processors as the major contributors of boron and cyanide problems.

To reduce the chemical concentrations of boron and cyanide, an evaporation unit has been installed at the photo lab. The evaporation unit pretreats the chemical solutions used in developing film prior to its entering the neutralization basin. It handles approximately 700 gallons per day. The photo lab generates approximately 20,000 to 25,000 gallons per day of washwater, only 700 gallons per day of the most concentrated solutions are directed to the evaporation unit. The evaporation unit reduces the amount of sludge entering the neutralization basin from the film developing process. This sludge is placed directly in barrels at the photo lab and disposed of in accordance with hazardous waste regulations. Approximately 3 to 5 barrels (55 gallons each) of sludge are generated each month. Analysis of discharge from the STP after the installation of the evaporation unit has shown that boron and cyanide levels continue to exceed permit limits (Personal Communication, Sue Yee, Central Valley Water Quality Control Board, May 1990). Further investigations to determine the source of the boron and cyanide are ongoing.

Primary and secondary treatment at the STP includes a grit chamber, two clarifiers, two trickling filters, two anaerobic digestors, one chlorine contact chamber and an aeration pond. The effluent from the STP normally enters Hutchinson Creek in accordance with a NPDES permit issued by the CRWQCB (permit No. CA0110299). However, during times of low flow in the creek, a major portion of the treatment plant effluent is diverted to the golf course equalization pond where it is used for irrigation. Non-hazardous solids from the anaerobic digestors are taken to the base landfill for disposal.

3.11.3 Hazardous Waste Generation and Disposal

Beale AFB has five accumulation areas for containerized hazardous wastes. Site managers have the responsibility of maintaining and inspecting the individual points of generation within shop areas. Site managers generally transport wastes from the generation points to the 90-day accumulation sites on a weekly basis. All waste oils and fluids are either placed into drums or directly into aboveground or underground storage tanks. All waste oils are then sold to a local waste oil contractor through the Defense Reutilization and Marketing Office (DRMO). Beale AFB has applied for a Resource Conservation and Recovery Act (RCRA) Permit for the storage of hazardous wastes. Beale AFB Central Storage Facility currently operates under interim status. The majority of drummed wastes is transported to the Central Storage Facility prior to removal by the DRMO at McClellan AFB, California. Wastes not drummed are disposed into drains connected to oil/water separators, then to sanitary sewers, which convey wastes to the STP. Beale AFB is required to report generation totals to the Region IX office of the U.S. Environmental Protection Agency and the State of California Department of Health Services biennially for the preceding calendar year. The base is also required to report hazardous waste management spending to HQ SAC each fiscal year. All of these reports are sources of information for types and quantities of hazardous wastes generated by base operations. Annual forecasted quantities of wastes generated at Beale AFB are presented in Table 3-7 by category.

TABLE 3-7
Annual Forecasted Quantities of Wastes Generated
At Beale AFB

Product	Total (Gal/Yr)	Percent of Total	Total Drummed (Gal/Yr)	Percent of Total Drummed
Paint & Thinners	1,572	2.49	792	7.61
Strippers	474	0.75	462	4.44
Acids	11,820	18.71	0	0
Soap	3,172	5.02	60	0.58
Oils & Fluids	13,077	20.70	0	0
Solvents & Degreasants	4,541	7.19	2,004	19.25
Photo & NDI Chemicals	20,054	31.74	530	5.09
Fuel	4,462	7.06	4,242	40.75
Miscellaneous Chemicals	4,012	6.35	2,320	22.29
TOTALS	63,184 ¹	100	10,410	100

Source: Wastewater Characterization/Hazardous Waste Survey, Beale AFB, CA January, 1989. USAF OEHL Report 89-003EQ0013ASC.

Note: ¹Modified to correct mathematical error in source.

3.11.4 Beale AFB Installation Restoration Program

The Installation Restoration Program (IRP) is a product of DOD policy. This policy, directed by Defense Environment Quality Program Policy Memorandum 81-5, has three objectives. The first is to identify and fully evaluate suspected problems associated with past hazardous material disposal sites on DOD facilities; second, to control the migration of hazardous contamination from such facilities; and third, to control hazards to health and welfare that may have resulted from these past operations. The legal mandate for the USAF IRP is the Comprehensive Environmental Response Compensation and Liability Act (CERCLA or Superfund) and the Superfund Amendments and Reauthorization Act (SARA).

The IRP is a three-phase program designed to ensure that identification, confirmation and quantification, and remedial actions are performed in a timely and cost-effective manner. The phases are as follows:

- Preliminary Assessment/Site Inspection.
- Remedial Investigation/Feasibility Study.
- Remedial Design/Remedial Action.

Beale AFB currently has 24 IRP sites. Figure 3-8 shows the general location of these sites. The sites include four landfills, three fuel spill areas, two aboveground fuel storage areas, two sites associated with photographic wastewater treatment, two engine test cells, two pesticide/herbicide buildings, one fire training area, and eight other sites of various types. One of these miscellaneous sites is actually a wide area of the base where over 750 abandoned underground storage tanks are suspected. Table 3-8 lists the 24 IRP sites, a brief description of each site, and the waste types suspected for each site. None of these sites nor any other portion of Beale AFB has been listed or proposed for listing on the National Priorities List (40 CFR 300 Appendix B and Federal Register Vol. 54 and 55).

A major field investigation of all 24 sites was recently completed. This work and an earlier study represent the bulk of the remedial investigation activities that are expected to occur on the base. No further action is recommended at five sites at this time. Additional investigation will be required at a dozen sites and monitoring of conditions will continue at 15 sites. Five sites are ready for feasibility studies and seven for risk assessments. After these additional investigations, studies, and assessments are completed remedial design and action can proceed.

3.11.5 Underground Storage Tanks

There were approximately 750 underground storage tanks that stored fuel oil and gasoline in the area of Beale AFB previously occupied by Camp Beale. It is not known whether they were emptied or removed when the Army closed the camp. Camp Beale records suggest that these tanks were located within an area identified as Site 22 of the ongoing IRP. This area is shown on Figure 3-8. A review of 1943 maps of Camp Beale indicated that there were a total of 38 gasoline USTs with capacities between 5,500 and 12,000 gallons, and 715 fuel oil USTs ranging in size between 265 and 12,000 gallons.

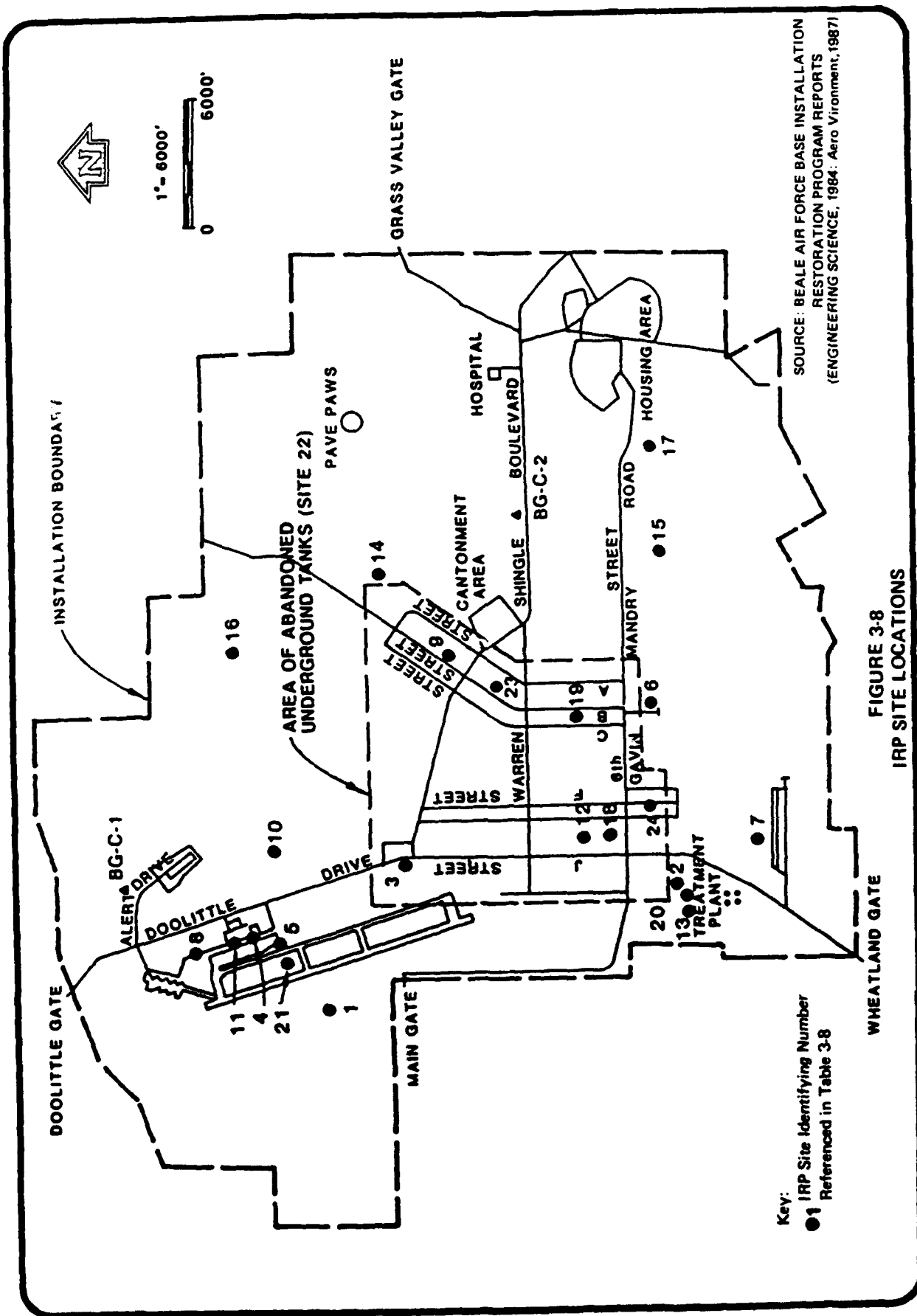


TABLE 3-8
Beale AFB IRP Sites Summary

Reference Number in Figure 3-8	USAF Site Identification Number	Site Name	Description	Potential Waste Types
1	SD-01	West Drainage Ditch	Receives surface runoff from flightline and runway area.	Jet fuel, oil, solvents
2	WP-02	Photo Wastewater Treatment Plant (PWTP), Injection Wells, and Sludge Basins	Physical and chemical treatment of photo processing wastewater. Between 1966 and 1986, PWTP effluent was discharged into three injection wells. Since 1974, two unlined sludge ponds have been used for drying PWTP clarifier sludge.	Pentachlorophenol, photo processing chemicals, trace metals, phenolics, benzene, oil and grease, chromium
3	FT-04	Fire Protection Training Areas	Fire prevention training exercises have been conducted in two areas approximately 200 feet apart. Waste oils, spent solvents, and aviation fuels were applied to the ground and ignited. There are two 25,000-gallon underground storage tanks in the area.	Waste oils, solvents, jet fuel
4	WP-05	Battery Shop Dry Well	Twenty-four gallons per month of neutralized lead-acid battery wastes were discharged to this dry well adjacent to the battery shop.	Neutralized battery acid (lead and organic compounds)
5	SD-06	SR-71 Shelter Drainage	Three hundred gallons per week of JP-7 jet fuel leaked onto hangar floors and shelter apron area. JP-7 jet fuel drained partly to an oil water separator and partly to the soil and gravel area between SR-71 shelter and flightline.	Jet fuel, solvents

TABLE 3-8 (cont'd)

Reference Number in Figure 3-8	USAF Site Identification Number	Site Name	Description	Potential Waste Types
6	LF-07	Landfill No. 2	The landfill occupies 56 acres and was used for refuse disposal between the early 1950s and 1980. In addition, approximately 380 cubic yards of sludge from PWTP (Site 2) and small amounts of petroleum and chemicals were also disposed here. Currently used for construction and grounds maintenance debris.	Domestic and base refuse, PWTP sludge, chemicals
7	SD-08	Army Biological Production Area	Area used for biological test site of wheat stem rust. Stock was incinerated and plowed into soil.	Freon, ethylene dioxide, metals, trichloroethylene (TCE)
8	SD-09	J-57 Test Cell	Jet aircraft engines tested here. Soils were stained in drainage ditch.	Jet fuel, petroleum distillates, soaps
9	SD-10	Entomology Building 2560	Gravel basin received drainage from pesticides and herbicides stored and mixed. Pesticide containers are also rinsed here.	Pesticides, herbicides
10	SD-11	J-58 Test Cell	SR-71 aircraft engines tested here. Soils are stained in drainage ditch.	Jet fuel, petroleum distillates, soaps, oil, TCE
11	SD-12	Aircraft Ground Equipment Maintenance Area	Aircraft ground support vehicles are known to leak oil and hydraulic fluids. Soils are stained in the ditch receiving drainage from support vehicles parking lot.	Oil, hydraulic fluid, fuel (gasoline)
12	WP-13	Entomology Building 440	Pesticides and herbicides were stored and mixed in and around the building.	Pesticides, herbicides

TABLE 3-8 (cont'd)

Reference Number in Figure 3-8	USAF Site Identification Number	Site Name	Description	Potential Waste Types
13	LF-14	Landfill No. 1	This landfill occupies 4 acres and received refuse in the 1940s. The source and composition of wastes is unknown. The site is no longer in use.	Unknown
14	SD-15	Transformer Drainage Pit	Between 1977 and 1979 transformers were drained here before repair.	Transformer oil, PCBs
15	LF-16	Landfill No. 3	This landfill occupies a 40-acre site. It has been in operation since 1981 and accepts domestic garbage and refuse.	Domestic garbage and refuse
16	WP-24	Explosive Ordnance Disposal Area	Unused ordnances are detonated in two bunkers or in an open field in this area. Diesel fuel and wood are used to burn smaller ordnances. The burned metal portion of the ordnances are placed in a trench.	Detonated munitions, explosives, flares, and pyrotechnics debris
17	OT-20	Best Slough	Empty drums were found in area	Unknown
18	ST-22	Bulk Fuel Storage Facility	Diked above ground fuel storage tanks.	Jet fuel, diesel fuel
19	DP-17	Photo Waste Emergency Holding Basin	During overflow conditions photo wastes are diverted to this holding basin with compacted clay bottom and cement sides.	PCP-treated photo wastewater
20	WP-19	Grease Pit (Sanitary Treatment Plant)	Unlined pit used to dispose sewage plant clarifier skimmings.	Oil and grease, organic solvents
21	ST-26	JP-7 Aboveground Fuel Storage Tanks (Flightline)	Diked aboveground fuel storage tanks.	Jet fuel

TABLE 3-8 (cont'd)

Reference Number in Figure 3-8	USAF Site Identification Number	Site Name	Description	Potential Waste Types
22	ST-23	Abandoned Underground Storage Tanks	Old base area maps show 753 abandoned underground storage tanks in the area previously occupied by Camp Beale.	Fuel oil, gasoline
23	SD-25	Ninth Transportation Shop	Repair shop and parking area for refueling trucks.	Jet fuel, diesel, oils
24	LF-21	Landfill No. 4	Trench fill 1960s-1970s. Contents unknown.	Demolition debris, domestic refuse

Source: CH₂M Hill, 1990.

Notes: ST = Underground tanks; tanks; petroleum, oil, and lubricant lines

LF = Landfills

DP = Disposal pits

WP = Waste pits, sumps, lagoons, waste treatment, evaporation pits

FT = Fire training area

SD = Surface runoff, wash racks, ditches, oil/water separators

OT = Other, ordnance, burn areas, buildings

Limited investigations to determine the presence of USTs have been conducted within the cantonment area affected by the construction of the Academic Complex. The results of the investigations indicated several magnetic anomalies that could be USTs. Excavation to confirm the results of the investigation will be conducted.

3.11.6 Asbestos

Initial inspection of facilities on base for the presence of suspected asbestos-containing material has been performed, but no sampling survey to confirm the presence of asbestos has been completed. A summary of available information on asbestos in buildings planned for demolition or renovation has been assembled from the base's asbestos registry and is presented in Table 3-9. Prior to demolition or renovation activities, a survey will be conducted to confirm the presence or absence of asbestos. If asbestos is present, appropriate remedial actions will be implemented.

3.12 SOCIOECONOMIC FACTORS

Socioeconomic factors are described in a geographical context comprising primarily Yuba County, but also taking account of the surrounding region, as appropriate. Many of the military and civilian personnel of Beale AFB reside off base in Yuba, as well as in the neighboring counties of Sutter, Butte, Nevada, and Placer. A few reside as far away as Sacramento and its suburbs. The buying power of the personnel employed at Beale AFB is a major factor in the region's economic health.

3.12.1 Demographics

Population estimates for Yuba and Sutter Counties are presented in Table 3-10. Yuba County has experienced a modest growth trend of between 1.7 percent and 2 percent per year since 1950. The Yuba and Sutter County population is projected to grow less rapidly (1.4 percent annually) than the State as a whole over the next several years.

3.12.2 Economic Characteristics

Beale AFB lies in the Yuba City Metropolitan Statistical Area (MSA), which is composed of Yuba and Sutter Counties. The resident civilian labor force for Yuba City MSA was 44,700 in 1987, of which 39,450 people were employed, while 5,250 (11.7 percent) were unemployed (Cal EDD, 1988). The average number of jobs provided by Yuba City MSA-based employers totaled 34,500 in 1987, indicating that several thousand working residents of the region were employed away from the MSA. The structure of employment in the Yuba City MSA reflects a diversified economy resting on a strong base of agriculture, manufacturing, commerce, and government. Table 3-11 provides the composition of wage and salary employment for the Yuba City MSA in 1987.

The number of construction workers in the Yuba City MSA generally balances the demand for such skills, according to the California Employment Development Department (Cal EDD). During 1987, the number ranged between a wintertime low

TABLE 3-9

**Summary of Asbestos Registry for Buildings Planned
or Considered for Demolition or Modification**

<u>Building</u>	<u>Results of Initial Inspection</u>	<u>Type of Material Sampled</u>	<u>Results of Analysis</u>
2195 Commissary Warehouse	No entry in registry	Pipe insulation	3 samples contained asbestos ranging from 2 to 24%, one sample did not contain asbestos.
2193 Hazardous Material Storage Facility	No entry in registry	No samples taken	NA
2198 High Voltage Electrical Switching Station	No entry in registry	No samples taken	NA
2174 Decontamination Facility	Suspected material throughout, suspected material in exterior wall, none friable.	No samples taken	NA
2175 Dormitory	Suspected material throughout, suspected material in exterior wall, none friable.	Boiler tank insulation	5% asbestos
2176 Dormitory	Suspected material throughout, suspected material in exterior wall, none friable.	Boiler tank insulation	5% asbestos
2177 Dormitory	Suspected material throughout, suspected material in exterior wall, none friable.	Boiler tank insulation	5 to 10% asbestos
2185 MWR Rental and Zone C Operations	Suspected material in exterior wall.	Boiler tank insulation, stack cover, return line insulation, and fire door.	4 samples contained asbestos ranging from 8 to 30%
2184 Incinerator	Suspected material in exterior wall.	No samples taken	NA
2180 Veterinarian	Suspected material throughout, suspected material in exterior wall, none friable.	Boiler room pipe insulation	10 to 20% asbestos

TABLE 3-9 (cont'd)

Building	Results of Initial Inspection	Type of Material Sampled	Results of Analysis
2179 Class 6 Storage, Social Actions, and Area Defense Council	Suspected material in Education Office, suspected material in exterior wall.	Boiler room pipe and tank insulation, ceiling tile, and water pipe insulation	1 sample contained asbestos at 80%, 3 samples did not contain asbestos.
2171 Communications Squadron	Suspected material in exterior wall.	Wall tile	1 sample did not contain asbestos.
2172 Communications Squadron	Suspected material throughout, suspected material in exterior wall.	No samples taken	NA
2131 Military Working Dog Kennels	No entry in registry	Ceiling tile	1 samples did not contain asbestos.
5700 Hospital	No entry in registry	Ceiling tile	2 samples did not contain asbestos.
2417 Administrative Facility	Suspected material throughout, suspected material in exterior wall.	Not identified	8 samples did not contain asbestos.
1096 Eatire Building including Survival Equipment Shop	No suspected material noted in attic.	Roof, pipe, and tank insulation; spray-on treatment on walls and ceilings; ceiling tiles; panels; walls; and dust.	15 samples did not contain asbestos, 27 samples contained asbestos ranging from less than 1% to 100%.
2418 Physical Fitness Center	No suspected material noted throughout.	Heat pipe insulation and boiler room insulation (pipe insulation has since been removed).	2 samples contained asbestos ranging from 15 to 65%.
2471 Furniture Storage and Communication Facility	Suspected material in exterior wall.	Fire box, boiler, exhaust stack, water return pipe, and wall insulation.	3 samples contained asbestos ranging from 1 to 50%, 6 samples did not contain asbestos.
3306 Child Development Center	No suspected material noted.	No samples taken	NA

NA = Not applicable.

TABLE 3-10

Estimated Population of Communities Surrounding Beale AFB

	<u>Population</u>
Yuba County	57,300
Marysville	11,850
Wheatland	1,890
Unincorporated Area	43,600
Sutter County	62,500
Yuba City	24,600
Live Oak	4,100
Unincorporated Areas	33,800
Total Yuba and Sutter Counties	120,000
Total Urban	42,500

Source: Cal DOF 1989.

Note: Individual figures may not add to totals
because they have been rounded.

TABLE 3-11

**Annual Average Civilian Wage and Salary Employment
Yuba City Metropolitan Statistical Area, 1987
(Yuba and Sutter Counties, CA)**

<u>Economic Sector</u>	<u>Number of Jobs</u>
Total agriculture, forestry, and fishing	5,200
Agriculture production	4,725
Agricultural services, forestry, and fishing	475
Total nonagricultural	29,300
Construction and mining	1,850
Manufacturing	3,200
Food & kindred products	1,100
Lumber & wood products	1,225
Other manufacturing	875
Transportation and public utilities	1,275
Wholesale trade	1,325
Retail trade	6,300
Finance, insurance, and real estate	1,425
Services	5,925
Government	8,025
Federal	1,475
State	850
Local & education	5,700
Total employment	34,500

Source: Cal EDD, 1988.

Note: Employment is reported by place of work. Individual job figures may not add to totals because they have been rounded.

of 1,575 and a summertime high of 1,925 (Cal EDD, 1989). Construction workers in the area have remained a relatively constant percentage of the total labor force through the years, expanding with the overall growth of the area workforce (Cal EDD, 1988). The Sacramento Valley is an enormous labor market, and there is considerable mobility of workers responding to project opportunities throughout the region. The rapid growth of the valley and foothills communities has attracted large numbers of skilled and unskilled workers; therefore, no problem has been experienced in securing labor for construction projects.

The Cal EDD projects modest growth of employment in the Yuba City MSA. Between 1987 and 1989, Cal EDD estimated that the total number of jobs in the region would increase by about 850, or about 2.5 percent. The retail trade sector was expected to experience the largest employment increase of any sector during this period followed by the services and government sectors (Cal EDD, 1988). These projections do not take into account possible USAF actions. Other central foothill counties and counties around Sacramento are all projected to grow more rapidly than Yuba and Sutter in the near future (CCSCE, 1988), implying greater employment opportunities. Similar projections hold for the growth of personal income in the area. Personal income levels in the Yuba City MSA have been lower, on a per capita basis than the statewide averages. In 1987, the per capita income for the MSA was \$12,158, compared to the statewide average of \$17,841. The statewide average breaks down into a metropolitan portion average of \$18,044 per capita, and a nonmetropolitan area average of \$13,299 per capita. On this latter basis, the Yuba City MSA's per capita income is close to the statewide nonmetropolitan area average (BEA, 1989).

The Beale AFB Annual Report FY 1988 Economic Resource Impact Statement (ERIS) indicates that the base had a total of 4,642 personnel directly connected with host and tenant activities in FY 1988, of whom 4,142 were military personnel and 500 were civilians. An additional 748 civilian and contractor personnel were employed in the Base Exchange, private on-base business, and contractor assignments (Beale AFB 9th SRW/ACC, 1988). The ERIS estimates for payroll and expenditures spent in a 50-mile radius Economic Impact Region (EIR) are presented in Table 3-12.

As indicated in Table 3-12, the \$102.97 million of direct Beale AFB-related spending within the 50-mile radius EIR for payroll, goods, and services generated a cumulative economic impact of \$258.65 million in 1988 (Beale AFB 9th SRW/ACC, 1988). This implies that the base had a regional multiplier effect equivalent to 2.5 times the value of direct base-related spending (a direct impact of \$102.97 million plus an indirect and induced effect of \$155.68 million). The economic impact region encompasses all of Yuba and Sutter Counties and portions of Butte, Sierra, Nevada, Placer, El Dorado, Sacramento, Yolo, and Colusa Counties. Secondary job creation due to the infusion of new income generated an additional 1,732 jobs in the region, according to the ERIS. Secondary job creation is the additional employment created within the 50-mile EIR in response to the multiplier effect of the base-related demand for construction, materials and equipment, and consumer goods. The level of demand is estimated in the ERIS based on levels of on-base construction activities, materials and equipment requirements, and payroll expenditures.

TABLE 3-12
Payroll and Expenditures and Estimated
Impacts in 50-Mile Economic Impact Region in 1988

	Total Expenditures (\$ Millions)	Regional Impacts (\$ Millions)
Total Payrolls	\$101.11	\$58.59
Military (Appropriated)	80.07	44.35
Civilian (Appropriated)	12.32	7.15
Nonappropriated NAF and other civilian payroll	8.72	7.09
Total Construction and Services Procurements	\$54.57	\$44.38
Construction	25.13	5.60
Labor	(NA)	15.08
Materials and Equipment	(NA)	
Services	11.18	3.40
Labor	(NA)	2.05
Materials and Equipment	(NA)	2.42
Education Funds (includes impact)	2.42	1.05
Commissary/Base Exchange	1.05	14.79
Other	14.79	
Total Expenditures	\$155.68	\$102.97
Total Expenditures in EIR		\$258.65
Cumulative Impact of Spending in EIR		1,732
Secondary Job Creation Due to Expenditures		

NA = Not available.
Source: Beale AFB 9th SRW/ACC, 1988.
Note: Details may not add to totals due to rounding.

3.12.3 Housing

The housing situation in Yuba and Sutter Counties is relatively soft, with new single family home starts having declined between 1987 and 1988. According to the Yuba-Sutter Chamber of Commerce, the housing market is in equilibrium with the present supply of new homes equal to about 12 to 18 months of demand, at current levels. Rental vacancy rates in apartment complexes are running at 5 percent. (Yuba-Sutter CoC, 1989). New subdivision homes are being priced from \$75,000 to \$125,000. Developers and landlords are expecting that the closure of Mather AFB in Sacramento and transfer of some units to Beale AFB will firm up the market, and some spillover of housing demand from the Sacramento area is beginning to be experienced. According to the Base Housing Assistance Office, "the rentals in the Yuba City, Marysville area are generally within the price range of all the military assigned to Beale AFB." The average two bedroom apartment rents for \$300-450 per month, and a three bedroom house rents for \$495 and higher (Beale AFB 814th CSG/DEEV, November/December 1988).

Total housing in Yuba and Sutter Counties in 1987 amounted to 43,586 units, of which 28,478 (65 percent) were single family units, 9,920 were multiple family units (23 percent), and 5,188 (12 percent) were mobile home units (Yuba-Sutter CoC, 1989). The SACOG is projecting that by the year 2000, the housing stock in the two-county area will total 54,357 units, a 25 percent increase. This rate of growth is equivalent to an average annual compound rate of 1.71 percent, which is about the same as the recent trend of population growth in the area.

According to the Base Housing Assistance Office, military family housing at Beale AFB consists of 1,712 units (211 for officers and 1,501 for enlisted personnel), and typically there are about 200 families on the waiting list at any given time (Beale AFB 814th CSG/DEEV, November/December 1988). An estimated 606 Beale AFB families are housed in private housing off base. In addition to family housing, nine dormitories provide space for 1,090 Airman and Non-Commissioned Officers (NCO) not accompanied by dependents. Temporary lodging arrangements at Beale AFB consist of the following:

Visiting Airman Quarters	33 units	67 beds
Visiting Officer Quarters	37 units	37 beds
Temporary Lodging Facilities	24 units	66 beds

3.12.4 Education

Yuba and Sutter Counties have 41 elementary schools, five intermediate schools, ten high schools, 13 parochial/Christian schools, two special schools serving only handicapped students, one regional occupational program, 23 preschools and daycare centers, one community college, and three satellite colleges. Enrollment in the public elementary, intermediate, and high schools totaled 21,125 pupils in 1988--1,040 in the parochial/Christian schools, 335 in the special education schools, and 10,193 in Yuba Community College (Yuba-Sutter CoC, 1988).

Schools that educate dependents of Federally employed personnel are eligible for Federal Impact Aid Subsidies under Categories A and B. Category A funds apply to dependents who have a parent or parents who both live and work on base. Category B funds apply to dependents who have a parent or parents who work on base but live off base in housing that is not Federally subsidized. In FY 1987-88, Beale AFB education impact funds totaled \$2,123,101, with an additional \$301,000 being provided as tuition assistance for college-level student dependents (this money is included in the Construction and Services Procurement component of Table 3-12; ERIS, 1989). Most of the school impact assistance went to Yuba County schools. Federal funding of all types to Yuba County schools amounted to \$5.75 million in FY 1987-88 (Davis, 1990), which represented about 12 percent of the system's total budget of \$48.3 million. The Beale AFB school impact funds therefore accounted for more than one-third of the county schools' Federal funds, and for about 4 percent of the schools' total funding.

Table 3-13 shows the distribution of Beale AFB students in Yuba and Sutter Counties public schools, grades kindergarden through 12. Lone Tree (K-3) and Far West (4-6) schools are located on Beale AFB on sites leased by the Wheatland Elementary School District, but they operate independently of the base. All other schools are off base. Smaller school districts, such as Camptonville and Plumas Elementary in Yuba County and Live Oak Unified School District in Sutter County, had no students qualifying for impact assistance from Beale AFB (Personal communications, school districts, 1990).

The three satellite colleges are all housed at Beale AFB--Golden Gate University (of San Francisco), Chapman College, and University of Southern California. (Yuba-Sutter CoC, 1988). Education enrollment of base personnel totaled 2,191 persons during FY 1987-88: 27 in technical courses, 1,929 in undergraduate courses, and 236 in graduate courses. (ERIS, 1988)

3.12.5 Community Service Facilities

On Beale AFB, the 9th Strategic Hospital serves on-base requirements. It has a staff of 398 persons, of whom 362 are military and 36 are civilian employees (ERIS, 1988). Law enforcement is provided on base by the Security Police (9th Security Police Squadron), which has a total of 233 personnel (ERIS, 1988).

The Services Squadron (SV) of Beale AFB has the responsibility to provide for the needs of base personnel (EDAW, 1988). Under this charter, SV operates four functions: furnishings (such as linens, etc.); services (including the Base Exchange, which is managed by AAFES; the Base Commissary, which is managed by Air Force Commissary Services; the mortuary; and the honor guard); billeting; and dining. The Commissary provides troop issue support and subsistence support to authorized patrons--base personnel, dependents, and retired military personnel. The Base Exchange sells consumer goods at a main store, and provides other services at a number of small shops, a laundromat, a snackbar, a barbershop, and service stations. These are located in the cantonment area of the base, which also includes a post office, a credit union, a bank, and a number of recreational and activity facilities (EDAW, 1988).

TABLE 3-13

**Beale AFB Students Enrolled in Yuba and Sutter County
Public Schools, FY 1989-90, by Assistance Category, and School Capacity**

School District	Number of Beale AFB Students by Assistance Category			Total Enrollment	Percent Beale AFB Students of Total Enrollment	Total Capacity	Total Enrollment as Percent of Capacity
	A	B	Total				
Wheatland Elementary School District	1,109	100	1,209	1,602	76	2,533	63
Wheatland Union High School District	242	95	337	470	72	1,200	39
Marysville Joint Unified School District	0	255	255	8,800	3	9,800 ²	90
Yuba City Unified School District	0	202	202	8,700	2	9,130	95
TOTAL	1,351	652	2,003	19,572 ¹	10	22,663	86

Notes: ¹ Approximately 3,000 additional students attended schools in districts with no Beale AFB associated students.

² Inferred from stated level of enrollment as a percent of capacity.

Source: Personal communications with school district administrative assistants.

The base's Morale, Welfare, and Recreation organization (9 CSG/SS) provides a wide range of recreational and personnel support programs, including athletic programs, bowling and golf facilities, the Recreation Center, arts and crafts, a youth activities program, chaplain services, a veterinarian, and a childcare center. MWR also operated the Officers and NCO Open Messes, the Aero Club, and the base Rod and Gun Club (ERIS, 1988).

4.0 ENVIRONMENTAL CONSEQUENCES

This section provides a discussion of the environmental impacts associated with the realignment of the 323rd FTW to Beale AFB; means to mitigate adverse environmental impacts; potential cumulative impacts; any adverse environmental effects that cannot be avoided; the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity; and any irreversible or irretrievable commitments of resources associated with implementation of the realignment. The concept of "significance" used in this document is defined in Section 1508.27 of the CEQ's regulations implementing NEPA, and includes consideration for both context and intensity (or severity). In the discussions that follow, criteria used to distinguish between significant and insignificant impacts are provided. To the extent feasible, distinctions are also made between local and regional significance, and short- versus long-term duration.

4.1 MISSION AND OPERATION

Implementation of the realignment would ~~move operations to Beale AFB~~ and increase its overall operation. The realignment would ~~increase personnel by approximately 1,602 (including military, civilian, and support)~~ and station 14 T-43 and 25 T-37 aircraft at Beale AFB. The realignment would require that additional facilities be constructed and/or modified in the flightline, cantonment, and family housing areas on base. These facilities would be associated with a new academic complex, aircraft maintenance complex, and base operating support facilities.

Aircraft operations at Beale AFB will be significantly increased as a result of the realignment. At Mather AFB, current SUNT flight activity consists of an average of 49 T-43 operations and 183 T-37 operations per day. When these operations are added to current Beale AFB flight activity, a maximum increase of approximately 34 percent--from 668 operations to approximately 897 operations per day--may result. An operation consists of one takeoff, one landing, one low approach, or one departure (as in a touch and go). In addition, the base population would increase by ~~approximately 3,435 persons, including military personnel and dependents.~~

Increases in base personnel and overall base operation will help offset the recent force structure drawdown of the SR-71 program, which was completed in June 1990. This drawdown resulted in the loss of approximately 624 positions (both military and civilian) on base, as well as a number of flight operations per day. The exact number of daily operations associated with the SR-71 drawdown is classified.

4.2 GEOLOGY, TOPOGRAPHY

General geologic conditions are considered to be similar across the base. Because of this similarity, potential impacts and mitigation measures are also expected to be similar, if not identical. For this reason, impacts and mitigation measures are discussed together as a whole and are applicable to all areas of the base.

Earthquake-induced strong groundmotion. Beale AFB is situated in a tectonically active region that can be expected to experience groundmotion within the foreseeable future. Strong groundmotion from earthquakes can damage structures or facilities not specifically designed and constructed to withstand such motion. Impacts associated with earthquake-induced strong groundmotion can be significant and adverse, but mitigable. However, based on the seismic history of the area and the fact that the nearest active fault is located approximately 25 miles from the base, impacts at Beale AFB are expected to be minimal.

Liquefaction, Settlement, and Expansive Soils. Liquefaction can occur in saturated granular soils subjected to strong groundmotion and will cause loss of soil strength so that structures will not be supported. The potential for liquefaction to occur in areas where realignment activities will occur is expected to be low due to the absence of significant saturated soils and because soils beneath the sites contain sufficient clay materials to preclude susceptibility to liquefaction. Differential settlement or expansion of soils underlying buildings, roads, and other facilities associated with the realignment may lead to damage of these structures. Damage typically consists of cracks in slabs or plaster, but may lead to significant structural damage if the settlement/expansion is extreme. However, because site-specific geotechnical investigations have not been conducted, the potential for liquefaction, settlement, or expansion cannot be dismissed. Impacts to the project from liquefaction could be significant and adverse, but are mitigable.

Erosion. There is a potential for erosion and subsequent deposition from sheetflow during heavy rains, as well as wind erosion. Impacts associated with excessive soil erosion and/or subsequent deposition of eroded material may involve damage to structures. ~~These impacts could be significant and adverse, but are mitigable.~~

Construction-related impacts. Construction-related impacts to the geologic environment primarily involve terrain modification associated with grading (cuts, fills, berms, drainage diversion measures), dust generation, and increased erosion potential. ~~These impacts could be significant and adverse, but are mitigable.~~

4.2.1 Cumulative Impacts

Because of the localized extent of the risk from seismic hazards and the nature of the potential impacts to and/or from the geologic environment, there should be no significant cumulative geologic impacts as a result of activities associated with the SUNT relocation to Beale AFB.

4.2.2 ~~Impacts to Earth Resources~~

The following measures are proposed to mitigate impacts to earth resources:

- ~~Implement erosion control measures during construction to prevent sediment from entering the environment.~~
~~Implement dust control measures during construction to prevent dust from entering the environment.~~
~~Implement sediment control measures during construction to prevent sediment from entering the environment.~~

- Grading activities will be limited to essential project areas only, and cut and fill volumes will be minimized to the extent possible to reduce construction-related impacts to insignificant levels.

The following potential measures would mitigate impacts to earth resources:

- All structures and facilities would be designed and constructed in accordance with applicable codes and standards to reduce potential strong ground-shaking impacts to insignificant levels.
- Site-specific geotechnical investigations would be required to evaluate whether subsurface soils are susceptible to liquefaction, settlement, and/or expansion. Specific recommendations developed by a qualified geotechnical engineer, based on the results of the geotechnical investigation, would be incorporated into building and facility designs to reduce these impacts to insignificant levels.

4.3 AIR QUALITY

Air quality impacts will be associated with both construction and operation phases of the realignment. The construction phase will use mobile diesel and gasoline construction equipment. The operation phase will result in incremental traffic emissions, and increased combustion emissions associated with SUNT-related aircraft.

Construction Activity Emissions. It is anticipated that total project construction activities will be spread over a period of 3 years. During this time, internal-combustion engines used to power construction equipment will be primary sources of NO_x , SO_2 , CO, and reactive hydrocarbons (ROC, ozone precursors).

Construction air emissions have been estimated for individual construction activities on a daily and total cumulative basis. These emissions are based on an assumption of the types, size, quantity, and duration of use of construction equipment for construction projects of similar scope and magnitude. Maximum daily and total project construction emissions are provided in Tables 4-1 and 4-2. These tables present individual construction activities and approximate duration of these activities. There are three activities common to all phases: grading, foundation construction, and building erection. The construction phase also includes two additional activities: demolition, which will precede grading; and paving.

Grading activities will be the major contributor of air emissions associated with construction of SUNT facilities. Grading will require the use of heavy-duty equipment such as scrapers, motor graders, and dozers for earth movement. These grading activities will produce the peak daily air emissions for all criteria pollutants, except CO. Paving activities produce the peak daily emissions of CO due to the use of gasoline-powered dump trucks. High air emission rates of PM_{10} during grading will result principally from fugitive dust due to ground disturbance by construction equipment. The amount of area disturbed has been conservatively estimated assuming one third of the total project area is disturbed at any one time. Building erection will contribute to total construction emissions due to the extended nature of this activity. Fugitive dust

TABLE 4-1
Maximum Daily Construction Emissions

Activity	Activity Duration (Weeks)	Emissions in lb/day ^a (tons/day)				
		ROC	NO _x	SO ₂	CO	PM ₁₀
1. Demolition	1	5.8 (.2)	38.2	3.5 (*)	82.4 (.04)	3.2 (*)
2. Grading Fugitive Dust ^b	13	116.0 (.06)	1,375.3	135.8 (.07)	474.1 (.24)	118.10 ^c 2,906.70 ^c (1.45)
3. Foundation Construction	12	39.2 (.02)	191.9	14.6 (.01)	861.2 (.43)	14.2 (.01)
4. Road/Street Construction	8	26.9 (.01)	45.6	3.2 (*)	807.6 (.40)	3.1 (*)
5. Building Erection	67	23.7 (.01)	212.10	15.9 (.01)	280.8 (.14)	15.9 (*)
6. Paving	5	26.9 (.01)	45.6	3.2 (*)	807.6 (.40)	3.1 (.01)

Source: Dames & Moore computation.

^aAssumes 8 hours per day.

^bFugitive dust emissions occur during the grading activity.

^cFugitive dust emissions assume a 50% control efficiency for dust suppression (watering).

*Less than 0.01 tons/day.

TABLE 4-2

Total Construction Emissions

Activity	Activity Duration (Weeks)	Emissions (tons)				
		ROC	NO _x	SO ₂	CO	PM ₁₀
1. Demolition	1	0.01	0.10	0.01	0.21	0.1
2. Grading Fugitive Dust ^a	13	1.29	15.23	1.51	5.24	1.32 32.44 ^b
3. Foundation Construction	12	0.32	1.81	0.14	6.59	0.14
4. Road/Street Construction	8	0.54	0.91	0.06	16.15	0.06
5. Building Erection	67	1.32	11.85	0.89	15.67	0.89
6. Paving	5	<u>0.34</u>	<u>0.57</u>	<u>0.04</u>	<u>10.10</u>	<u>0.04</u>
TOTAL PROJECT:		3.82	30.47	2.65	53.96	34.99

Source: Dames & Moore computation.

^aFugitive dust emissions occur during the grading activity.

^bFugitive dust emissions assume a 50% control efficiency for dust suppression (watering).

emissions due to ground disturbance are expected to be minimal during non-grading activities.

~~Construction activities associated with the proposed project could exacerbate existing air quality, but impacts would be short-term, localized, and mitigable. Short-term exceedance of the NAAQS and CAAQS for PM₁₀ could result from dust emissions associated with grading. PM₁₀ impacts could be significant and adverse during grading operations if concurrent with high wind conditions, but mitigable.~~

Combustion emissions of NO_x and ozone precursor hydrocarbons from diesel-fired mobile construction equipment could contribute to an exceedance of the 1-hour NAAQS and CAAQS for ozone in the region. Grading equipment, because of their higher peak daily emissions, would have more effect on ozone than other construction activities. However, the impact of the emissions of NO_x and ozone precursors during grading will be significant only in the project area and will not significantly affect regional (air basin) air quality. Agriculture (pesticides, biomass, etc.) and transportation sources in the Sacramento metropolitan area are the major contributors to the ozone levels in Yuba County. The construction emissions (especially with staggered grading activities) would represent an incremental, short-term increase in the emissions inventory for the county. The probability of short-term localized exceedances of the NO_x, CAAQS and NAAQS will be minimal because: 1) construction equipment is mobile, 2) engine loads will fluctuate, and 3) the region is in attainment with respect to NO_x.

The construction related-air emissions of SO₂ and CO are expected to have insignificant impacts to local and/or regional air quality. Air quality impacts from CO emissions are usually associated with urban traffic, while SO₂ emissions are associated with large industrial point sources. Neither of these types of sources exists at or in the vicinity of Beale AFB.

Operational Emissions. Operational emissions of hydrocarbons, NO_x, SO₂, CO, and PM₁₀ will result from direct (primary) and indirect (secondary) activities associated with the realignment. Primary project emissions will emanate from the following direct activities and sources:

- Aircraft combustion emissions (idling and takeoff and landing cycles).
- Aircraft refueling emissions.
- Aircraft maintenance, including engine overhaul and testing.
- Parasail-related motor vehicle activity.

Secondary project emissions include the following indirect activities and sources:

- Transportation emissions (automobile traffic and bulk delivery trucks).
- Building maintenance.
- Fugitive hydrocarbons from the Shop and Gas convenience store.

The majority of direct project emissions will be associated with the operation of the SUNT training aircraft. Combustion emissions associated with the jet engines

have been calculated on a daily and annual basis. The aircraft will produce air emissions while in idle, takeoff, climbout, and approach modes. Emissions during cruising generally do not affect ambient air quality because they are released above the inversion layer. Table 4-3 presents the daily and annual emissions for SUNT training aircraft. Existing annual aircraft emissions from all flights, except those from the SR-71 and U2, are also presented in Table 4-3 for comparison to SUNT activity flight emissions. The comparison shows the largest percentage emissions increase will be for NO_x , approximately 26 percent. These projected emissions have been calculated based on typical modal times for USAF training operations and emission characteristics of AT-39 engines (EPA, 1985).

Emissions associated with engine maintenance and aircraft refueling activities will contribute to total project hydrocarbon emissions; however, these are not included in this analysis. Aircraft maintenance may also contribute hexavalent chromium emission and possibly emissions of other metals from plating activities. Because plans for the plating shop have not been finalized, these emissions have not been included in this analysis.

Secondary emissions for SUNT operations associated with commuter traffic have been quantified based on the estimated number of commuter trips. The Shop and Gas facility will also have fugitive hydrocarbon emissions from fueling additional personal vehicles. Tables 4-4 and 4-5 present these emissions on a daily and annual basis assuming approximately 276 round-trips (rt) per day from each of the off-base communities of Wheatland (50 miles rt), Yuba City (32 miles rt), and Marysville (26 miles rt). These trips assume minimal carpooling and typical emission profiles for California vehicles. Air emissions from residential housing will be primarily due to space and water heating by natural gas combustion.

Operation Impacts. Because a complete air emissions inventory is not available for Beale AFB, total operational impacts (aircraft and ground equipment) associated with the SUNT operations cannot be quantified. However, it is anticipated that air quality impacts resulting from the realignment will be insignificant with respect to regional conditions. SUNT operations presently occur at Mather AFB, which is 40 miles south of Beale AFB. Both bases are located within the Sacramento Valley air basin. Therefore, the SUNT operations at Beale AFB will not introduce a new source of emission into the basin or impact regional ozone levels. Emissions will impact local air quality on and near the base.

~~SUNT ground operations that include degreasing, painting, solvent use, plating, and engine testing will require air quality permits from Yuba County. These permits will require the use of EACT in accordance with the California Clean Air Act for control of hydrocarbon emissions.~~

4.3.1 Cumulative Impacts

~~The SUNT operations will require a replacement of SR-71 related operations to the Beale AFB air quality inventory, although, due to classification of the data on SR-71 related operations and emissions, these were not included in the~~

TABLE 4-3

**Daily and Annual Aircraft Emissions
From SUNT Operations**

Mode	Emissions (lb/day)				
	ROC	NO _x	SO ₂	CO	PM
Idle	196.6	28.6	9.2	635.9	2.5
Takeoff	0.8	119.8	4.3	3.0	6.4
Climbout	1.0	168.7	6.0	4.2	8.4
Approach	<u>3.0</u>	<u>482.1</u>	<u>17.1</u>	<u>12.0</u>	<u>24.0</u>
Daily Totals:	201.4	799.2	36.6	655.1	41.3
	Emissions (tons/year)				
	ROC	NO _x	SO ₂	CO	PM
Idle	25.55	3.71	1.20	82.66	0.33
Takeoff	0.10	15.58	0.56	0.39	0.83
Climbout	0.14	21.94	0.78	0.55	1.09
Approach	<u>0.39</u>	<u>62.67</u>	<u>2.22</u>	<u>1.56</u>	<u>3.12</u>
Annual Totals:	26.18	103.90	4.76	85.16	5.37
Annual Existing Beale AFB Aircraft Emission	839.00	399.00	64.00	2,116.00	22.00
SUNT increase as percent of existing Beale AFB aircraft emissions	3	26	8	.04	25

Source: Dames & Moore computation.

TABLE 4-4
Daily Secondary Emissions from SUNT Operations

Activity	Emissions in lb/day (tons/day)				
	ROC	NO _x	SO ₂	CO	PM
Automobile Traffic					
Off-base commuting	52.03	86.02	8.74	568.87	21.74
On-base commuting	<u>4.26</u>	<u>4.38</u>	<u>0.30</u>	<u>49.00</u>	<u>0.73</u>
			(*)		(*)
Subtotal	56.29	90.40	9.04	617.87	22.47
			(*)		(.01)
SR-71 Drawdown	(25.27)	(41.78)	(4.27)	(276.30)	(10.56)
Shop and Gas	<u>5.13</u>	<u>--</u>	<u>--</u>	<u>--</u>	<u>--</u>
			(*)		(.01)
Total	36.15	48.62	4.77	341.57	11.91
			(*)		(.01)

Source: Dames & Moore computation.

*Less than 0.01 tons/day.

TABLE 4-5
Annual Secondary Emissions from SUNT Operations

Activity	Pollutant (ton/yr)				
	ROC	NO _x	SO ₂	CO	PM
Automobile Traffic					
Off-base commuting	6.77	11.18	1.14	73.95	2.83
On-base commuting	<u>0.55</u>	<u>0.57</u>	<u>0.04</u>	<u>6.34</u>	<u>0.10</u>
Subtotal	7.32	11.75	1.18	80.29	2.93
SR-71 Drawdown Shop and Gas	(3.28) <u>1.06</u>	(5.43) <u>--</u>	(0.55) <u>--</u>	(35.92) <u>--</u>	(1.38) <u>--</u>
Total	5.10	6.32	0.63	44.37	1.55

Source: Dames & Moore computation.

analysis. The number of days when the NAAQS and CAAQS for ozone is exceeded in Yuba County is not expected to increase.

The emissions from aircraft operations emanate as mobile sources that are dispersed rapidly and have minimal localized air quality impacts. Emissions of NO₂, SO₂, CO, and PM₁₀ are not expected to exceed the NAAQS and CAAQS. The cumulative air quality impacts of SUNT aircraft with other base facilities will be negligible due to the intermittent use and extreme mobility of aircraft. The relocation of the SUNT operations will result in an increase in the Beale AFB air emissions inventory, however, the large spatial spread of Beale AFB emission sources and its relative isolation from other major sources of emissions in Yuba County will result in an insignificant cumulative effect on air quality.

It is assumed that emissions from SUNT operations at Beale AFB will be similar to those currently occurring at Maxwell AFB. Since both are in the same regional air basin, no significant cumulative impact on regional air quality is anticipated other than those emissions associated with construction related activities.

4.3.2 Mitigation Measures

Construction-related Mitigations. The following proposed mitigation measure will help to reduce construction-related air quality impacts to insignificant levels:

- During high wind conditions, watering of disturbed areas and/or application of chemical dust suppressants will be implemented to help control fugitive dust.

The following potential measures would further reduce construction-related air quality impacts:

- Construction activity would be planned to minimize overlap of activities and subsequent overlaps in peak short-term emissions.
- Vapor recovery systems would be installed on any gasoline-powered construction equipment.
- During periods of high ozone conditions, construction activity would be temporarily curtailed to minimize the potential for an ozone NAAQS exceedance.
- Storing of high-oil fuel tanks and covering of stock piles would be performed to help minimize fugitive dust.

Operations-related Mitigations. The following potential mitigation measures incorporated in the operations would help to reduce operational air quality impacts to insignificant levels:

- ~~The following potential mitigation measures would be implemented to reduce operational air quality impacts to insignificant levels:~~

- State-of-the-art natural gas boilers would be used at new facilities to the extent feasible.

4.4 **WATER RESOURCES**

Potential impacts to water resources will be similar at all areas where realignment activities will be located. Because of this similarity, potential impacts and mitigation measures are discussed as a whole and are applicable to all areas.

Potential impacts associated with flooding could include damage to structures and the interruption of SUNT activities. However, the potential for flooding in areas where the realignment activities will occur is considered to be very low due to the following factors:

- Limited watershed areas that would in turn limit the potential supply of runoff onto these areas.
- The relatively flat or gently rolling terrain.
- Significant distance from the three principal drainages on Beale AFB to new realignment facilities.
- The relatively small, seasonal rainfall that characterizes the Beale AFB area.

Therefore, the impacts of flooding in areas where SUNT activities are proposed are not considered significant.

The increased water demand (Section 4.10) as a result of the realignment will be primarily a result of domestic uses and is not expected to significantly affect regional water table levels or alter the direction of groundwater flow. Despite relatively high water use in areas around Beale AFB for agricultural irrigation, the additional water demand as a result of SUNT activities is not expected to be significant with respect to the base's or to overall regional groundwater availability, and is not anticipated to affect other groundwater users in the area.

Drainage areas within the Beale AFB area, including the North Fork, Middle Fork, and South Fork of the Beale River, are not expected to be significantly affected by construction or operation of the realignment. The Beale River is the primary drainage of these areas from construction areas and the relatively flat or gently rolling surrounding terrain.

4.4.1 Groundwater Resources

Beale AFB is relatively isolated from other water users in the area. This, coupled with the fact that the additional groundwater supply necessary to support the SUNT realignment will not adversely affect regional groundwater conditions, suggests that cumulative impact to water resources will not be significant. This will be further

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- The grading activities will be minimized during the rainy season (November-March) to the extent possible.
- All grading and site preparation plans will incorporate best available storm water management practices.

4.5 BIOLOGICAL RESOURCES

Construction of an access road north of the CAMS site would result in the removal of three or four vernal pools located along a small drainage. These pools are relatively small; the largest appears to be about 100 by 25 feet. It is expected that a COE Nationwide General Permit will be required for development of the gymnasium and access road. Introduced plant material will be removed from many facility locations; however, this loss is considered minor in the context of the large amount of similar habitat throughout Beale AFB.

A license is required for the collection, storage, transport and sparse riparian section. The license is issued by the Department of Fish and Game, Bureau of Fisheries. Since it is subject to change, the license is not valid for more than 90 days. A COE Nationwide General Permit is also required for this activity.

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4.5.1 Cumulative Impacts

4.5.3

- Limit grading areas to the minimal amount feasible.

• (Avoid wetland/riparian habitat adjacent to Huchuck Creek. Wetland habitat may be present. This area will not be disturbed.)

[REDACTED]

- Relocate a 40-square-foot wetland community consisting of two trees and *Lythrum thistle*, after consultation with the California Department of Fish and Game to verify need to relocate.
- Develop a landscape plan to reestablish vegetation in disturbed areas as quickly as feasible. The plan should include the use of native species, to the extent possible.
- Develop a vernal pool mitigation area on base to replace similar habitat lost.

Also, the following potential mitigation measures would help reduce impacts on biological resources:

- **Install intermittent drainage at preferred Parsons site outside circular shed with COE approval.**

4.6 ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL RESOURCES

No standing historic structures or sites of specific ethnographic or heritage concern have been identified on Beale AFB. Hence, ~~no impact assessment focuses on potential effects to archaeological sites.~~

The realignment may cause both direct and indirect impacts to archaeological resources. Potential direct impacts would result primarily from ground disturbance associated with construction of the proposed facilities. These activities (use of heavy equipment, grading, excavation, and other disturbances), if conducted in the area of archaeological sites, may cause displacement, breakage, or removal of archaeological materials. Removal of archaeological materials would result in total data loss for the affected area, while displacement of materials would compromise the vertical and horizontal contexts that are crucial for archaeological interpretation. If artifacts or other remains are broken or crushed, diagnostic elements are often lost.

The addition of new personnel to the base would increase the potential for indirect impacts to archaeological resources. In general, these types of impacts consist of casual collecting of surface artifacts or displacement of archaeological materials resulting from increased use of base grounds. Casual collecting is of particular concern because formal artifacts, which are often particularly important for understanding site function, are usually most susceptible to this activity.

Construction activity associated with the realignment will primarily occur in areas that are either classified Zone D or Zone E as it relates to potential archaeological sensitivity on Beale AFB (see Appendix B for a detailed explanation of these zones). [REDACTED]

The flightline area is within the General East Texas sensitivity zone (Zone D). A roughly 1/2-mile corridor to the east of Beale AFB has recently been surveyed under a privately funded investigation, resulting in the discovery of three small bedrock mounds about 1 mile north of the proposed impact area (Minnery, 1989). No surveys have been conducted within the proposed CAMS area and no archaeological sites have been recorded there. One historic location is shown on the 1911 Downs Valley USGS topographic quadrangle, surveyed in 1908. Another 1957 map identifies the landowner as M. Shaw. However, no surface manifestation of this structure currently exists in the area.

The preferred Parallel Area site is also within Zone D. However, a survey of the area in late 1983 and early 1984 failed to uncover any evidence of archaeological resources. Two historic locations are identified as located on the 1957 survey plan to or near the preferred Parallel Area site. The early site of a school house, shown on three maps from the 1860s and 1870s, and the location of an unidentified structure on a 1940 map are also near this preferred site. These historic locations were not located during the 1983-84 survey (Kewell, 1987).

4.6.1 Cumulative Impacts

The SR-71 drawdown did not require construction or demolition of buildings or create other disturbances in areas of historical or archaeological sensitivity. Therefore, the realignment of Beale AFB is not expected to create significant cumulative impacts to archaeological, historic, or cultural resources known to occur on base.

4.6.2 Mitigation Measures

Mitigation of archaeological impacts associated with the realignment of Beale AFB will be accomplished in accordance with regulations implementing Section 106 of the National Historic Preservation Act. Consultation with the SHPO has been initiated regarding appropriate procedures to identify potentially significant cultural resources that could be affected by the project. Implementation of the following proposed mitigation measures will reduce potential impacts to archaeological resources to insignificant levels:

- Conduct survey or monitoring of potential impacts of project activities on portions of the project area.
- Conduct archaeological survey of project area to identify and record any archaeological resources that may be affected by the project.
- Conduct archaeological survey of project area to identify and record any archaeological resources that may be affected by the project.

4.7 NOISE

In order to assess noise impacts related to SUNT operations at Beale AFB, the Air Force Engineering Service Center at Tyndall AFB, Florida generated a series of noise contours that incorporated projected SUNT operations with current base flight operations using data submitted for the SUNT program. The noise contours were developed using the computer program NOISEMAP, which is documented and described in Appendix E.

Noise contours were generated for flying activities anticipated to occur with the SUNT operations. Figure 4-1 indicates a slight increase in noise levels, depicted in L_{50} , over existing conditions. Although noise levels of 65 L_{50} or greater cover a large area around Beale AFB, the addition of the SUNT operations will not significantly expand this area. The area under the contours, 65 L_{50} or greater, will be approximately 36,300 acres, compared to 35,550 acres for current conditions. This represents an increase of approximately 2 percent, which is considered insignificant. Land use around the base is primarily agriculture and mineral extraction, which are not noise-sensitive activities.

Aircraft flight operations associated with SUNT activities are at subsonic speeds. Therefore, no impacts from sonic booms will occur as a result of the realignment.

4.7.1 Cumulative Impacts

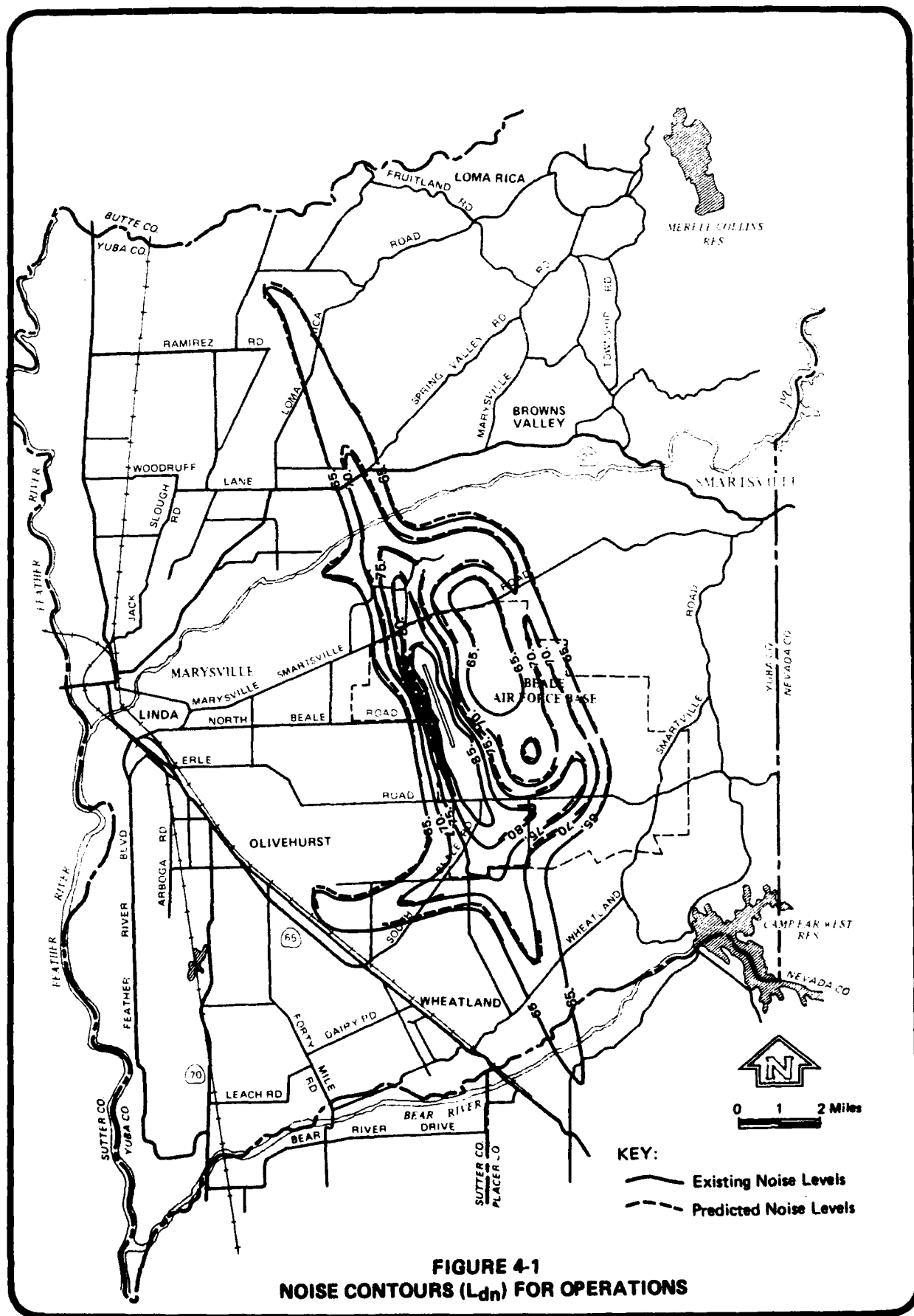
The deactivation of the SR-71 program at Beale AFB has resulted in a reduction in flight activity and a subsequent reduction in noise levels surrounding the base. Noise complaints have decreased considerably since the deactivation of the SR-71 program. The expected noise reduction as a result of drawdown of the SR-71 program is nearly equal to the predicted noise increase as a result of the realignment (HQ SAC, 1990). Therefore, the realignment of Beale AFB to accommodate the SUNT will have no significant cumulative effect on noise levels at Beale AFB.

4.7.2 Mitigation Measures

To further reduce potential noise impacts to neighboring lands, it has been proposed that the USAF minimize high flight activity associated with SUNT operations to the extent practical. No other mitigation measures are proposed.

4.8 LAND USES

No significant impacts are expected to occur to existing land uses outside Beale AFB as a result of the realignment. Increased flight activity, associated with SUNT operations, is predicted to expand the land area included under the 65 L_{50} noise contour by 2 percent (from 35,550 acres to approximately 36,300 acres). This increase is not considered significant because current land uses in this area are primarily agriculture and mineral extraction. In addition, this small increase should still be consistent with the CLUP and Yuba County's General Plan.



4.8.1 Cumulative Impacts

No cumulative impacts to land uses are expected to occur as a result of the SUNT addition to Beale AFB.

4.8.2 Mitigation Measures

No mitigation measures are proposed.

4.9 TRANSPORTATION

The relocation of the SUNT to Beale AFB will increase personnel on the base by approximately 1,602 persons--829 permanent party and an average of 773 students. Living quarters adjacent to the Academic Complex is planned for the students. No decision has been reached regarding the possibility of additional housing for permanent party personnel. Therefore, approximately 829 SUNT personnel can be expected to live off base and travel daily by car to SUNT facilities in the cantonment and flightline areas (as a worse-case scenario). These additional car trips will adversely affect the ability of the existing gates to accommodate traffic, especially during morning and evening peak periods. Information on expected changes in peak period round trips is shown in Table 4-6. Additionally, dependents of SUNT personnel will travel to base by car through the various base gates to take advantage of on-base facilities. The relative impact on each gate will depend on destinations and time of day of travel. These impacts are expected to be adverse and significant, but mitigable.

Relocated SUNT personnel and their dependents will add auto traffic to the on-base road system. Detailed information on numbers of personnel expected at specific on-base destinations is not available to quantify impacts at individual roads and intersections. However, it is expected that a number of intersections currently near or exceeding their capacity would receive increases in traffic volume. This traffic increase represents an adverse and significant, but mitigable impact.

Parking on base will also be affected by the addition of SUNT personnel automobiles. Additional parking space for the expected 1,602 new personnel will be needed in the cantonment and flightline areas. It should be noted that parking convenient to many existing facilities in the flightline area is already limited. This represents an adverse and significant, but mitigable impact.

Rail and truck delivery of aviation fuel is also expected to increase as a result of the proposed action. Information on the level of increased delivery activity that will be required to support the SUNT relocation has not been quantified by base personnel. However, rail and truck deliveries to support SUNT operations are not anticipated to have a significant impact to existing base facilities.

4.9.1 Cumulative Impacts

The deactivation of the SR-71 program will eliminate approximately 624 positions, which will result in a small but beneficial impact to ground transportation.

TABLE 4-6

Impact on Peak Period Round Trips

	<u>Existing Conditions</u>	<u>Additions with SUNT Relocation</u>	<u>Conditions After SUNT Relocations</u>
Personnel	4,134 ¹	829	4,963
Personnel Residing Off-Base	1,332	829	2,161
Approximate Number of Peak Period Round Trips (weekday)	1,079 ²	671 ²	1,750 ²

Notes: ¹Beale AFB 9th SRW, 1990

²Assuming an average occupancy of 1.235 persons per car as measured on various weekdays in December 1987. EDAW, 1988.

This beneficial impact will reduce the overall impacts on base transportation due to realignment.

4.9.2 Mitigation Measures

Improvements to transportation recommended in the Beale AFB Draft Comprehensive Plan (EDAW, 1988) would help to mitigate impacts to gates, on-base roads, and parking from the addition of SUNT personnel and their cars. These recommended improvements address capacity problems at several intersections on Doolittle Drive: standardization of control signing and marking; inadequate flightline parking; poor parking layout design; two poorly aligned and narrow bridges on Gavin Mandery Drive; and lack of appropriate pedestrian and bicycle routes. A brief summary of the potential improvements recommended in the Draft Base Comprehensive Plan follows.

- Improve a number of intersections on Doolittle Drive and implement measures to reduce traffic in the central cantonment area.
- Install school zone signing and beacons according to the Manual on Uniform Traffic Control Devices (MUTCD), as well as establish student walking routes and install crosswalks and crosswalk signs.
- Improve parking lots, including construction of new parking facilities on the flightline, and improve layout and access points for the major lots in the cantonment areas.
- Upgrade striping and signs to conform with the MUTCD to improve safety.
- Replace right-hand passing lanes on Gavin Mandery Drive and in front of the hospital on Warren Shingle Drive with left-turn lanes to improve safety.
- Install guide signs at appropriate locations with a level of information comprehensible in moving traffic.
- Improve the roadside at the intersection of A Street and Doolittle Drive so that driveways for the fueling area can be differentiated from A Street and thereby improve safety.
- Develop a comprehensive pathway system in the cantonment and flightline areas to improve pedestrian access.
- Develop a local road between A and B Streets as the primary access road to the Base Exchange and Commissary parking lots in conjunction with planned relocation of the Commissary.

- Develop a collector road as the primary access point to the flightline using sections of Douglas Street, Creasman Avenue, and Curtis Street to provide safe and efficient travel in that area.

In addition to improvements recommended in the Draft Comprehensive Plan, additional mitigation measures are proposed to help reduce the impact of SUNT traffic on Beale AFB gates, roads, and parking to insignificant levels.

To accommodate the peak hour arrivals and departures, Doolittle, Main, and Wheatland gates should be expanded. Additional lanes at Doolittle, Main, and Wheatland gates with the appropriate additional security personnel to adequately cover the lanes will allow the increased number of peak hour arrivals and departures to be processed without excessive traffic congestion.

A decrease in the number of single-occupant car trips should be encouraged to reduce traffic congestion and parking space requirements. A combination of ride-sharing, expanded on-base shuttle bus service, and pedestrian and bicycle travel will reduce on-base traffic generated by the SUNT relocation.

Additional parking spaces will be required even if a decrease in the proportion of single-occupant car trips is achieved. Up to 1,602 additional spaces could be required if all the SUNT personnel have cars on base at one time. Parking improvements already planned or recommended in the Draft Comprehensive Plan and as part of the planned SUNT facilities should be implemented for the relocated SUNT personnel.

4.10 UTILITIES

Current electrical service and capacity is adequate to meet the additional demand anticipated by the addition of the SUNT to Beale AFB. Although increased electrical usage will occur as a result of the realignment, this impact is not considered to be significant.

The addition of the SUNT will increase the average daily number of water users by approximately 2,000 (assuming 400 dependents), or 20 percent. This will increase the average daily water usage to approximately 3.0 mgd in the winter and to 7.2 mgd in the summer. With the SR-71 program completely deactivated, these usage numbers will only increase by 10 percent to 2.75 mgd in the winter and 6.6 mgd in the summer as a result of the SUNT realignment. Although this is well below the 11.25 mgd capacity of the base water supply system, excessive pumping may increase high mineral levels in the water.

The water wellfield has a capacity to treat up to 8 mgd; the only treatment is disinfection and chlorination. The wells are equipped with sand filters to remove fine sands generated in pumping. The water distribution system appears to be adequate at the base with the exception of the 18-inch water supply line leading from the well field area to the main pump station. This supply line is programmed for replacement in an action unrelated to the realignment.

A new BIDDS Communications System is currently planned for installation at Beale AFB, which is unrelated to the SUNT relocation. This system will be in place and operational before the commencement of SUNT operations. The new BIDDS system has the capacity to handle present and planned growth at Beale AFB (including the SUNT relocation) into the foreseeable future. Therefore, no significant or adverse communication impacts will occur.

4.10.1 Cumulative Impacts

The realignment of Beale AFB will not present any significant cumulative effects to the base electrical supply and communications systems. If the mitigation measures proposed below are implemented, there will be no significant cumulative impacts to existing water supply or usage. The unrelated deactivation of the SR-71 program will not result in any adverse cumulative effects to utilities.

4.10.2 Mitigation Measures

A number of measures could mitigate impacts to base utilities to insignificant levels:

Electrical Supply and Communications. No mitigation measures are proposed.

Water Supply. Potential measures to mitigate impacts to the water distribution system include the following:

- Addition of a second 8-inch supply line to the flightline area to ensure adequate and sustained water for firefighting purposes.
- Addition of booster pumps to deliver water to the family housing area.
- Upgrading of system to add treatment for manganese.

4.11 WASTE MANAGEMENT

Solid Waste Disposal. The landfill has 2,950,000 cubic yards (cy) capacity remaining or approximately another 45 years of life at projected use rates. The addition of the SUNT to Beale AFB is expected to increase solid waste disposal by about 20 percent per month to about 6,300 cy per month. This will reduce the useful life span for this facility to about 39 years, and represents an adverse and significant, but mitigable impact to solid waste disposal.

Wastewater Disposal. The existing wastewater and sewage disposal system has adequate capacity to handle projected requirements generated by the realignment. However, the new kitchen in the flightline area will add flow volumes that exceed the lift pump capacities at the Building No. 1086 lift station.

The wastewater flow is delivered to the base STP. The STP has a design capacity of 3 mgd and presently peaks at 1.45 mgd. The STP has sufficient capacity

to handle an expected increase of 20 percent in volume generated by the SUNT relocation (approximately 1.75 mgd during peak periods).

During periods of heavy rain, stormwater runoff infiltrates the sanitary sewer system and could cause an overflow condition if the operators did not meter the flow into the plant by allowing receiving lines to backfill. To date, this has not caused significant problems. However, with the addition of the SUNT personnel and the addition of increased hard surface areas that would allow for an overall increase in stormwater runoff, this condition is considered to be potentially adverse and significant, but mitigable.

The STP discharge currently exceeds the boron and cyanide limits of its NPDES permits. Investigations are ongoing to determine the source of boron and cyanide. The addition of the plating shop to Beale AFB may increase cyanide levels entering the STP and, therefore, cyanide levels in the discharge, worsening this existing condition. This is considered to be potentially adverse and significant, but mitigable.

Hazardous Waste Generation and Disposal. The addition of the SUNT to Beale AFB is not anticipated to generate significant quantities of hazardous waste. An additional 250 gallons per month is expected. These wastes would be fuels, lubricants, antifreeze, and other similar products associated with the operation and maintenance of the T-37 and T-43 aircraft, as well as solvents from aircraft washing, corrosion control, and plating operations. The RCRA Parts A and B Permit application will be reviewed to determine if modifications are necessary to ensure wastes generated by the realignment comply with upcoming and existing hazardous waste regulations, such as the Toxicity Characteristic Leaching Procedures, which will be effective in September 1990. New general waste analysis will be conducted to ensure all waste is properly characterized. Any waste generated as a result of the operation of SUNT activity will be stored and disposed of in accordance with existing base policies and procedures for hazardous materials, as well as in accordance with appropriate State and Federal regulations. A new 90-day waste accumulation point will be established at or near SUNT operations and maintenance activities and will be operated in compliance with security, general inspection, and personnel training requirements. The site will be managed by ATC maintenance or contractor personnel. All required spill and disposal equipment will be maintained to implement Site Specific Contingency Plans in the event of an emergency. A storage tank will be added to hold waste oils generated by maintenance of SUNT aircraft. The new accumulation point and storage tank will be managed in coordination with existing base policies and procedures for hazardous waste. Therefore, no significant impacts relating to hazardous waste generation and disposal are anticipated.

Installation Restoration Program. Current IRP activities at Beale AFB directed at cleanup of past hazardous waste disposal sites will continue unimpeded throughout the construction period, as well as during the operation of SUNT activities. The new or modified facilities required to accommodate the SUNT will not affect any identified IRP site with the exception of Site 22, which encompasses a broad area of the base and addresses abandoned USTs. However, base-wide IRP remedial investigation/feasibility studies and subsequent remedial action will continue until cleanup is complete.

Therefore, the realignment of Beale AFB to accommodate the SUNT will not adversely impact ongoing IRP activities.

Underground Storage Tanks. A UST survey of approximately 100 acres in the immediate vicinity of the preferred location for the Academic Complex has been completed. The survey indicated several potential UST locations. It is possible that product stored in old tanks may have leaked and caused localized contamination of soil and possibly groundwater. Other areas where facilities are being constructed have not been surveyed. It is very unlikely that USTs exist in the planned Parasail Area or in the area planned for the CAMS. However, it is anticipated that they will not present a significant impact to the overall development of facilities.

Asbestos. Asbestos may be present in some of the buildings identified for demolition or renovation; however, a detailed sampling program has not yet been conducted. The presence of asbestos is not likely to present significant impacts as long as appropriate remedial actions are implemented to safely remove asbestos prior to demolition or renovation activities.

4.11.1 Cumulative Impacts

No significant cumulative impacts to waste management are expected as a result of the SUNT relocation. Reductions in hazardous waste generation as a result of the deactivation of the SR-71 program will help to offset increases in solid and liquid waste generation expected as a result of the realignment.

4.11.2 Mitigation Measures

Mitigation measures could reduce potential impacts to waste management to insignificant levels.

Solid Waste Disposal

- A potential measure is to vigorously pursue a program to recycle wastes, especially paper, glass, aluminum cans, and plastic to help minimize waste use and extend its expected life.

Wastewater Disposal

Mitigation measures are:

- Implementing a waste management program at Building No. 1006 AF to minimize waste generation.
- Implementing a waste management program at Building No. 1006 AF to minimize waste generation.
- Implementing a waste management program at Building No. 1006 AF to minimize waste generation.

the practice of allowing lines to backfill and reduce the potential for overflow of the STP system.

- To reduce potential SUNT contribution to overall exceedances in the STP effluent, three measures are under consideration;
 - Implementing a permit for plating shop wastewater to reduce cyanide entering the STP inflow.
 - Consolidating all plating operations to off-base, private operations, eliminating the need for a plating shop on base.
 - Closing the existing plating shop at nearby McClelland AFB, again eliminating the need for a plating shop on base.

Hazardous Waste Generation

No mitigation measures are proposed.

Installation Restoration Program

Any potential contamination sites will be investigated within the IRP to determine if any contamination exists. Investigations will be conducted when necessary under IRP guidelines and in accordance with applicable Federal, state, and county regulations. The IRP is part of the Defense Environmental Restoration Program which conforms with the Superfund Amendments and Reauthorization Act (SARA) Section 211. The USAF will follow the intent of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) and SARA as part of the IRP program directives within the DOD.

Underground Storage Tanks

It is proposed that:

- Measures planned for SUNT facilities where geophysical surveys have been conducted; ground testing will be accomplished to confirm initial results. If leaks are confirmed, they will be repaired in accordance with applicable state, local, and Federal regulations.
- Construction of a new small, planned, SUNT facility, located on base, will be completed. The facility will be designed and constructed in accordance with applicable Federal, state, and county regulations.

Asbestos

- [REDACTED]

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To estimate the nature and extent of socioeconomic impacts, the Economic Impact Forecast System (EIFS), an interactive computer system for evaluating socioeconomic impacts of military base mission changes on a user-defined region--in this case, the two-county area of Yuba and Sutter Counties--was used. EIFS was developed by the Construction Engineering Research Laboratory of the U.S. Army Corps of Engineers and is maintained by the Department of Urban and Regional Planning of the University of Illinois at Urbana-Champaign. EIFS has a large data base of socioeconomic information on every county in the United States, which can be incorporated into economic models to generate estimates of the effects on specified county or multi-county areas of changes in construction and operating activities at military bases. Estimates of construction and personnel requirements for the SUNT relocation developed by Beale and Mather AFB were input to the EIFS models to produce projections of likely changes in area population, employment, incomes, school-age children, and government expenses and revenues. These changes are evaluated below in the context of the baseline characteristics of the study region so that conclusions may be drawn as to the extent of the action's socioeconomic impacts.

[illegible]

This increment would represent an addition of around 3.3 percent to the two-county area's projected 1993 population of about 125,100 people. Thus, the projected increment of population due to the relocation exceeds historical average rates, but the impact is not considered to be significant because this is a one-time change and not a continuing growth element.

Employment. ~~The SUNT relocation will generate jobs in the region.~~ In the short term, construction of the SUNT facilities is projected to require approximately 800 workers in the peak year (FY 92) of the 3-year construction phase (FY 91-93). The construction labor force is projected to number about 300 workers in FY 91 and 170 workers in FY 93. (This estimate was developed based on the programmed costs and assumes that 34.2 percent of cost is for labor.) The infusion of new construction payroll into the regional economy, plus procurement of materials and services from local vendors, will also stimulate secondary employment in support and service sectors. The EIFS model projects that total direct and indirect regional employment attributable to the construction work will amount to about 3,465 person-years over the 3-year construction phase.

The SUNT relocation will also cause a long-term net increase in direct employment of permanent base military and civilian personnel to about 829 persons. Their consumption expenditures, plus those of the navigation students during their stay at Beale, will support and stimulate other employment in the region. The EIFS model projects that total regional direct and indirect employment supported by the SUNT activities will average about 2,200 jobs.

Since contracts have not been awarded for the construction work or procurement of materials and services for the SUNT operation, it is not possible to identify which portion of the base's overall employment and income effects would accrue specifically to Yuba and Sutter Counties. It seems reasonable that one-fourth of the construction work would fall to Yuba and Sutter County contractors and construction workers because of their proximity to the site. The larger share of the work would probably go to Sacramento-based contractors who have greater resources. It is estimated, therefore, that direct and indirect construction employment accruing to Yuba and Sutter County residents from the SUNT relocation would amount to approximately 865 person-years of work, with the peak level totaling approximately 200 jobs in FY 1992. This number would represent an increase of about 0.5 percent of the projected 1992 resident civilian employed labor force, which is considerably less than the area's annual average growth rate of 1.3 percent per year. The projected short-term increment in construction-related local employment due to the SUNT is not regarded as a significant impact and may result in a net beneficial impact to the area.

It is estimated that the majority of the indirect employment stimulated by the SUNT operation would be in Yuba and Sutter Counties because much of the secondary employment would be due to local consumption spending by the base personnel. A two-thirds proportion of the total SUNT operation-generated employment accruing to the two-county area seems reasonable. This would amount to around 1,470 jobs (with a subjective margin of error of plus or minus 25 percent or 370 jobs). This one-time increase in jobs would occur between FY 91 and FY 93 and is not regarded as a significant socioeconomic impact and may result in a net beneficial impact to the area.

Personal Income. Costs of constructing the SUNT facilities have been estimated at \$148.6 million, of which expenses for construction labor, materials and equipment, and design services to be expended within the 50-mile radius EIR of Beale AFB are projected at approximately \$122.3 million. The regional share was estimated on the basis of the distribution of construction expenses for the base in FY 1988, which

showed that 82.3 percent of that year's total construction expenditures went to businesses and workers in the region (ERIS, 1988). The economic impact of the SUNT construction outlays on the EIR would amount to about \$193 million over the three years of scheduled work, according to the EIFS forecast model. This figure represents the total increase in business volume in the EIR due to the realignment construction work at Beale AFB. About \$70 million of the business volume change represents income accruing to households in the region (including on-and off-base military personnel) due to the infusion of construction payroll spending and local area procurement of construction materials and services. Assuming that one-fourth of the new income, or about \$18 million, actually accrued to Yuba and Sutter County households, the increment to the two-county area's total personal income of approximately \$1.4 billion would be about 1.3 percent. This amount is less than the area's recent trend of 3.5 percent per year since the early 1980s, which suggests that the construction income impacts would be insignificant and easily accommodated by the Yuba City MSA.

Base operating expenses are estimated to increase by about \$72 million per year after completion of the SUNT relocation. This estimate is based on the projected net change in base personnel applied to the base's total operating expenses in FY 88. About two-thirds of the base's FY 1988 expenditures accrued to businesses and workers in the EIR (ERIS, 1988). The regional economic impact of this spending, as measured by the total annual increase in regional business volume attributable to the SUNT-related activities, is projected to be about \$97 million per year, according to the EIFS forecast model. Of this figure, about \$48 million per year would accrue to regional households as personal income. As a measure of the significance of this increment of income, if two-thirds (\$32 million) of the total were to accrue to Yuba and Sutter County households, the increase would be about 2.3 percent of the total regional personal income of \$1.4 billion. This is substantially below the 3.5 percent per year actually being experienced in Yuba and Sutter Counties, leading to the conclusion that the SUNT operations would have a small, but positive impact on the local economy.

Housing. The increase in Beale AFB's military and civilian personnel from the SUNT relocation is estimated at 1,292 military and 310 civilians. Development of additional housing under a build-to-lease arrangement with a private developer is being considered. No decision has been reached on this issue. Rental vacancy rates in Yuba and Sutter Counties are running at approximately 5 percent, or 2,180 rental units (in 1987). In addition, some transferring personnel will commute from their current homes. Thus, the incremental demand associated with the SUNT relocation would not be expected to strain the local housing market supply or prices, and represents an insignificant impact.

Education. The number of school-age children that may be associated with the SUNT relocation is estimated at between 450 and 475. The wide range is due to the uncertainty of how many navigation students at any one time might have dependent children and the amount of induced local population growth that the SUNT program might stimulate. Most Beale AFB dependent children attend the Wheatland elementary and high schools, which have ample physical capacity to accommodate the potential increase in enrollment. Excess capacity in these schools is approximately 1,660 seats--930 at the elementary level and 730 at the high school levels.

The primary issue for schools is financial assistance for dependents of Federally-employed personnel, which is provided under the Federal education impact assistance program. If the assistance program is not decreased, any increase in enrollments can be accommodated by hiring more teachers to maintain proper student-teacher ratios. In FY 88-89, education impact assistance for the Wheatland schools is projected to amount to \$2.2 million, assuming 100 percent funding of the program (Cole, 1989). The \$2.2 million in impact assistance was associated with a total of about 1,546 Category A and B students in the two Wheatland school districts. Assuming the level of funding remains constant and all the dependents of SUNT personnel attend the Wheatland schools, the education impact assistance funding would increase by between approximately \$652,600 and \$688,850 per year. These funds would represent an increment to the two districts' revenue sources of about 7 percent based on their FY 87-88 financial resources, totaling \$9.6 million (Davis, 1990). Therefore, additional demands on the local education system are not expected to be significant.

Community Services and Facilities. The realignment of Beale AFB includes additions to BOS facilities, as described in Section 2, and relocation of support personnel from Mather AFB. These additional facilities and personnel will bring community services and facilities up to the strength required to support the realignment.

4.12.1 Environmental Impacts

The relocation of the SUNT to Beale AFB will have a small but beneficial impact on the environment of Beale and Mather AFBs. This impact will arise from the relocation of the SUNT program to Beale AFB, which will result in the relocation of the SUNT program to Beale AFB. The relocation of the SUNT program to Beale AFB will result in the relocation of the SUNT program to Beale AFB. The relocation of the SUNT program to Beale AFB will result in the relocation of the SUNT program to Beale AFB.

4.12.2 Mitigation Measures

The relocation of the SUNT to Beale AFB will have a small but beneficial impact on the environment of Beale and Mather AFBs. This impact will arise from the relocation of the SUNT program to Beale AFB, which will result in the relocation of the SUNT program to Beale AFB. The relocation of the SUNT program to Beale AFB will result in the relocation of the SUNT program to Beale AFB.

4.13 UNAVOIDABLE ADVERSE IMPACTS

The impact analysis presented above indicates that the realignment will not create any unavoidable adverse impacts that cannot be mitigated to insignificant levels.

4.14 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The short-term use of the environment necessary to accommodate the realignment at Beale AFB is not expected to result in significant long-term adverse impacts on the productivity of the environment. The realignment represents a commitment of a relatively small portion of Beale AFB to a more intensive land use. Once the SUNT facilities are in place, use of the acreage for other purposes will be

precluded. However, facilities could be removed and the land restored to approximately its original condition at the end of the project's useful lifetime. The affected areas should be available at that time for other possible beneficial land uses, contingent upon the then-prevailing plans and missions of Beale AFB.

Environmental protection measures would be included in the project to minimize the effects of potential environmental impacts. Most environmental impacts would be of short duration, and recovery from impacts is expected to be relatively rapid. As a result, there should be no significant narrowing of the range of beneficial uses of the environment, and no long-term significant risks to health and safety would result from the realignment.

1.14 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable commitments of natural resources that would result from the proposed action include consumption of fossil fuels for transportation/equipment and generation of electricity; use of materials during construction that cannot be recycled at the end of the project's useful lifetime; and use of energy for the production of materials used in new equipment and facilities. The relatively small scope of the realignment would not present any significant impacts.

The realignment contains no design elements that pose any danger of an environmentally significant accident, as long as recommended mitigation measures are implemented. In contrast, the primary purpose of the SUNT mission is to afford state-of-the-art training to military personnel in support of a strong, safe, and effective national defense.

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Beale Air Force Base

Maj. George O'Brien, Environmental and Contract Planning
Capt. Mark Plaster, Management Engineering Team
Capt. Tony Ronquillo, Public Affairs Office
Capt. Christopher Sherman, Bioenvironmental Engineering
Kirk Schmalz, Environmental and Contract Planning
Robert Woodson, Environmental and Contract Planning
Dennis Bruner, Environmental and Contract Planning
John Thomson, Environmental and Contract Planning
Tracy Kissler, Environmental and Contract Planning
Greg Miller, Environmental and Contract Planning
Tony Guerrero, Manager Waste Treatment and Water Supply, Environmental and Contract Planning

Brooks Air Force Base

Capt. Ike Andrews, IRP Program

Mather Air Force Base

Colonel McCormick, Base Operations
Capt. Byron Wall, Implementation Office
Capt. Douglas, Plating Operations

Headquarters, Strategic Air Command

Capt. Jamil Gormley, Engineering Services
Capt. Bob Harrison, Manpower

Yuba County

Rick Allman, Yuba County Planning Office
Bernie Engle, Air Pollution Control District
Kenneth Corbin, Air Pollution Control District

Placer County

Noel Bonderson, Air Pollution Control District

California Department of Fish and Game

Robert Hubbard

California Water Quality Control Board

Sue Yee, Central Valley Water Quality Control Board

Jones & Stokes

Jim Jokerst

The Nature Conservancy

Mary Ann Criggs, Botanist

APPENDIX A
Average Daily Air Emissions Inventory
For Yuba County

TABLE A-1
1983 Base Year Inventory
Average Daily Air Emissions
Yuba County

Source Category	Emissions (tons/day)						
	Total Organic Gases	Reactive Organic Gases	Carbon Monoxide	Oxides of Nitrogen	Oxides of Sulfur	Particulate Matter	Particulate Matter < 10 microns
STATIONARY SOURCES							
Fuel Combustion							
Agricultural	-	-	-	-	-	-	-
Petroleum Refining	-	-	-	-	-	-	-
Other Manufacturing/Industrial	1.2	0.9	1.3	0.5	-	0.1	0.1
Other Services and Commerce	-	-	-	0.1	-	-	-
Residential	0.2	0.1	1.1	0.2	-	0.2	0.1
Other	-	-	-	-	0.1	-	-
TOTAL FUEL COMBUSTION	1.4	1.0	2.4	0.8	0.1	0.3	0.2
Waste Burning							
Agricultural-Debris	1.1	0.4	8.9	-	-	1.0	1.0
Range Management	-	-	0.1	-	-	-	-
Forest Management	-	-	0.4	-	-	-	-
Incineration	-	-	-	-	-	-	-
Other	0.1	-	0.6	-	-	0.1	0.1
TOTAL WASTE BURNING	1.2	0.4	10	-	-	1.1	1.1
Solvent Use							
Dry Cleaning	0.1	0.1	-	-	-	-	-
Degreasing	0.1	0.1	-	-	-	-	-
Architectural Coating	0.3	0.3	-	-	-	-	-
Other Surface Coating	0.2	0.2	-	-	-	-	-
Asphalt Paving	0.3	0.3	-	-	-	-	-
Consumer Products	0.4	0.4	-	-	-	-	-
Industrial Solvent Use	0.1	0.1	-	-	-	-	-
TOTAL SOLVENT USE	1.5	1.5	-	-	-	-	-

TABLE A-1 (cont'd)

Source Category	Emissions (tons/day)						Particulate Matter < 10 microns
	Total Organic Gases	Reactive Organic Gases	Carbon Monoxide	Oxides of Nitrogen	Oxides of Sulfur	Particulate Matter	
Petroleum Process, Storage & Transfer	-	-	-	-	-	0.1	-
Petroleum Refining	0.4	0.4	-	-	-	-	-
Petroleum Marketing	0.1	0.1	-	-	-	-	-
Other	0.5	0.5	-	-	-	0.1	-
TOTAL PETROLEUM PROCESS, STORAGE & TRANSFER							
Industrial Processes	-	-	-	-	-	0.2	0.1
Food and Agriculture	-	-	-	-	-	0.3	0.1
Mineral Processes	-	-	-	-	-	0.1	-
Wood and Paper	-	-	-	-	-	0.6	0.2
TOTAL INDUSTRIAL PROCESSES							
Misc. Processes	1.1	1.1	-	-	-	-	-
Pesticide Application	-	-	-	-	-	4.7	2.8
Farming Operations	-	-	-	-	-	1.3	0.8
Construction and Demolition	-	-	-	-	-	8.2	3.2
Entrained Road Dust - Paved	-	-	-	-	-	3.1	1.4
Entrained Road Dust - Unpaved	0.1	0.1	0.8	-	-	0.1	0.1
Unplanned Fires	1.2	1.2	0.8	-	-	17	8.3
TOTAL MISC. PROCESSES	5.8	4.6	13	0.8	0.1	20	9.8
TOTAL STATIONARY SOURCES							

TABLE A-1 (cont'd)

Source Category	Emissions (tons/day)					
	Total Organic Gases	Reactive Organic Gases	Carbon Monoxide	Oxides of Nitrogen	Oxides of Sulfur	Particulate Matter < 10 microns
MOBILE SOURCES						
On Road Vehicles						
Light Duty Passenger	2.4	2.2	15	1.5	0.1	0.1
Light and Medium Duty Trucks	1.3	1.2	8.2	0.9	-	-
Heavy Duty Gas Trucks	0.3	0.3	3.8	0.3	-	-
Heavy Duty Diesel Trucks	0.1	0.1	0.4	1.0	0.1	0.1
Motorcycles	0.1	0.1	0.1	-	-	-
TOTAL ON ROAD VEHICLES	4.2	3.9	28	3.7	0.2	0.2
Other Mobile						
Off Road Vehicles	0.4	0.4	1.5	-	-	-
Trains	0.3	0.3	0.3	1.0	0.1	0.1
Aircraft - Government	0.7	0.7	1.1	0.3	-	-
Aircraft - Other	-	-	1.1	-	-	-
Mobile Equipment	0.3	0.3	3.2	0.9	0.1	0.1
Utility Equipment	0.2	0.2	0.9	-	-	-
TOTAL OTHER MOBILE	1.9	1.9	8.1	2.2	0.2	0.2
TOTAL MOBILE SOURCES	6.1	5.8	36	5.9	0.4	0.4
TOTAL YUBA COUNTY	12	10	49	6.7	0.5	10

NOTE: "-" indicates that emission estimates rounded off to less than 0.1 ton per day.

SOURCE: CARB, 1986.

APPENDIX B

Archaeological, Cultural, and Historic Resources

APPENDIX B

Archaeological, Cultural and Historic Resources

B.1 ARCHAEOLOGICAL SENSITIVITY ON BEALE AFB

The sensitivity zones for prehistoric resources (Figure B-1) were delineated on the basis of physiographic characteristics believed to influence prehistoric activities and, in turn, the occurrence of certain types of remains. Descriptions of the zones appear below.

Perennial Streams (Zone A) - Prehistoric activities associated with perennial streams would occur along the Dry Creek/Best Slough system and possibly Hutchinson Creek. These streams not only would have provided a stable water source for prehistoric inhabitants of the base, but would also support a riparian habitat containing relatively abundant resources. Any habitation sites on the base are likely to be situated in this zone.

Lower Foothills (Zone B) - The low, oak-covered foothills on the eastern portion of the base probably experienced the second most intensive prehistoric use of any area of the base. Surveys in nearby areas suggest that these hills were used for resource gathering and processing, and are likely to contain isolated bedrock milling features. Hunting blinds, though not expected anywhere on the base, are most likely to be found in this zone. Habitation sites may occur at the confluences of seasonal drainages in this zone, but are less likely than along perennial streams.

Seasonal Streams (Zone C) - Hutchinson Creek and Reeds Creek host minor riparian associations and may have provided economically important resources (grasses, sedges, forbs, and animals), particularly in the spring and early summer. Archaeological manifestations of the use of this zone are expected to be sparse because of the linear distribution of the resources.

Prime Vernal Pool Terrain (Zone D) - This is the area of the base where vernal pools are most frequent. Vernal pools have elsewhere been recognized to have provided minor concentrations of critically timed resources, and have been observed to be associated with sparse scatters of artifacts (Roop, 1981).

Other Areas (Zone E) - Areas away from water sources or prehistorically significant resources are generally unlikely to contain archaeological sites, but may have contained microenvironmental resources not predictable based on present information. Surveys of nearby areas, however, indicate that these areas were rarely used.

B.2 PREVIOUSLY RECORDED ARCHAEOLOGICAL AND HISTORIC SITES

Table B-1 and B-2 present information relative to previously recorded archaeological and historic sites in Beale AFB.

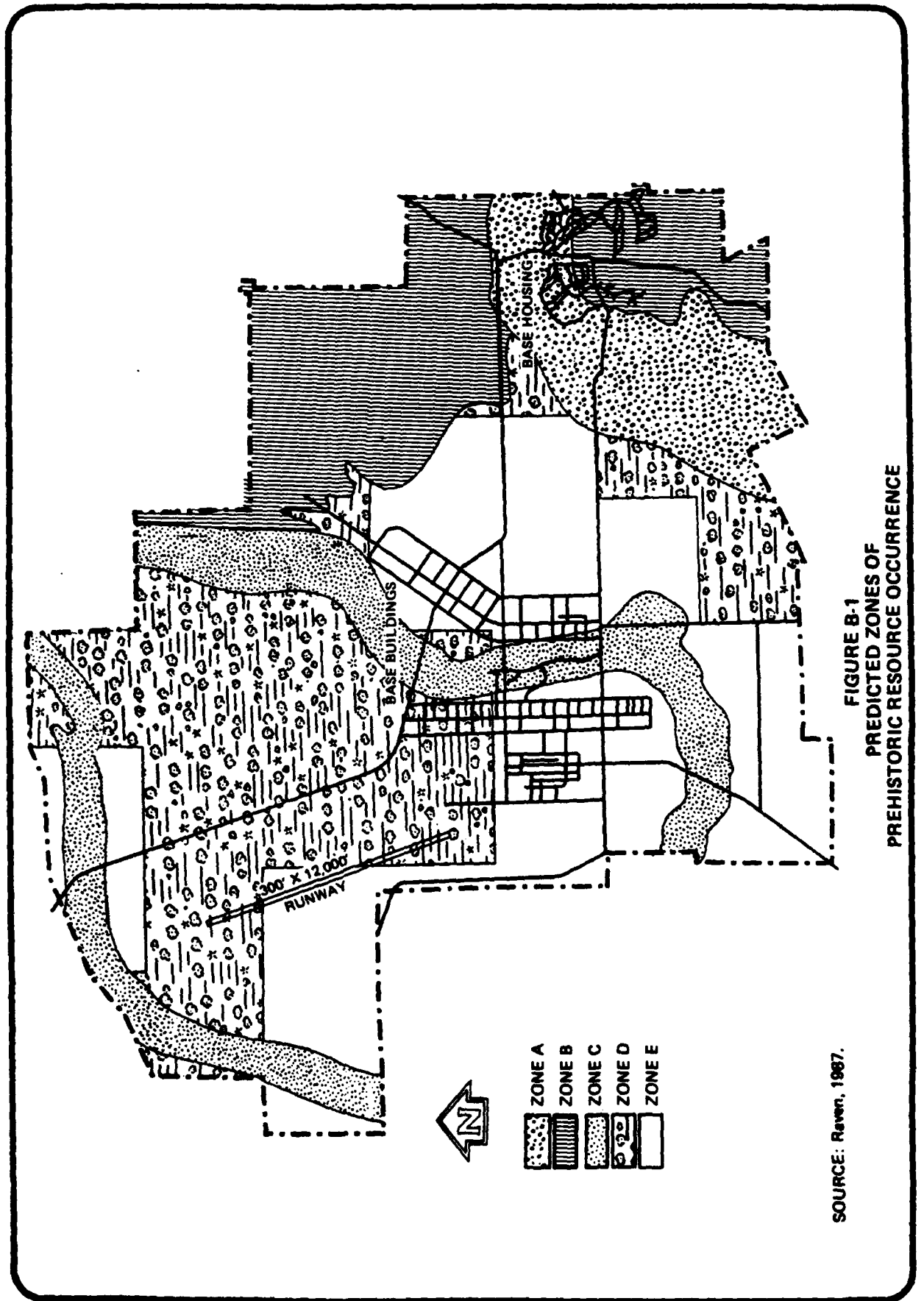


TABLE B-1
Previously Recorded Archeological Sites on Beale Air Force Base

<u>Site No.</u>	<u>Description</u>	<u>National Register Status</u>	<u>Potential Effect</u>	<u>Reference</u>
YUB-1157	Lithic scatter, bedrock mortars (64)	Eligible	Outside APE	Donovan 1984
YUB-1161	Lithic scatter	Eligible	Within APE	Donovan 1984
YUB-1162/H	Housepad, introduced trees, scatter or domestic debris	Recommended not eligible	Outside APE	Donovan 1984
YUB-1163/H	Foundations (4), introduced trees	Recommended not eligible	Outside APE	Donovan 1984
YUB-1164/H	Foundation for residence and barn, introduced trees, stock loading chute, cistern, scatter of domestic debris	Recommended eligible	Outside APE	Donovan 1984
YUB-1165/H	Scatter of historic debris	Recommended not eligible	Outside APE	Donovan 1984
YUB-1166/H	Scatter of domestic and work-related debris	Eligibility undetermined	Outside APE	Donovan 1984
YUB-1167/H	Barn foundation, cistern, cellar depression, scatter of domestic debris	Recommended eligible	Outside APE	Donovan 1984
YUB-1168/H	Scatter of historic debris	Eligibility undetermined	Outside APE	Donovan 1984

TABLE B-1 (cont'd)

<u>Site No.</u>	<u>Description</u>	<u>National Register Status</u>	<u>Potential Effect</u>	<u>Reference</u>
YUB-1169/H	Oval track with two barriers; probably military related	Recommended not eligible	Outside APE	Donovan 1984
YUB-1170/H	Mining tailings, containment dam, runoff collection ditch	Eligibility undetermined	Outside APE	Donovan 1984
BAFBO-1	Bedrock mortars (5)	Recommended not eligible	Outside APE	Donovan 1984
BAFBO-2	Bedrock mortars (11)	Recommended not eligible	Outside APE	Donovan 1984
AF-58-14	Scatter of shell beads (possibly redeposit)	Eligibility undetermined	Outside APE	Donovan 1984
BAF-1	Bedrock mortars (2)	Eligibility undetermined	Outside APE	Site Record
BAF-2	Bedrock mortar (1)	Eligibility undetermined	Outside APE	Site Record
BAF-3	Bridge	Eligibility undetermined	Outside APE	Site Record
BAF-4	Bridge	Eligibility undetermined	Outside APE	Site Record
BAF-5	Bridge	Eligibility undetermined	Outside APE	Site Record
BAF-6	Bedrock mortars (2)	Eligibility undetermined	Outside APE	Site Record

TABLE B-1 (cont'd)

<u>Site No.</u>	<u>Description</u>	<u>National Register Status</u>	<u>Potential Effect</u>	<u>Reference</u>
BAF-7	Foundations, scatter of domestic and work-related debris, one slab metate	Eligibility undetermined	Outside APE	Site Record
BAF-8	Bedrock mortars (16)	Eligibility undetermined	Outside APE	Site Record

TABLE B-2

Historical Locations on Beale Air Force Base

<u>Resource Type</u>	<u>Number</u>
Unidentified Structures	51
Homesteads	23
Roads	19
Mining Ditches	4
Schools	3
Trails	2
Hotels	2
Business (Riley & Company)	1
Community (Erle)	1
Dance Hall (Community of Erle)	1
Cemetery	1
TOTAL	108

B.3 SITES ELIGIBLE FOR THE NATIONAL REGISTER

As previously shown on Table B-1, two of the archaeological sites at Beale AFB have been determined eligible for inclusion on the National Register. A brief description of these sites is provided below.

Site 1 - YUB-1157

This site is located in the vicinity of Best Slough in the southern portion of Beale AFB. It contains a number of bedrock mortar pits in four zones of exposed, decomposed sandstone.

Site 2 - YUB-1161

This site is located west of a southwest trending intermittent tributary to Dry Creek south of the family housing area. It appeared to be a short-term, perhaps single use, chipping station where a large number of flakes/debitage have been found.

APPENDIX C

Noise Metrics

APPENDIX C

Noise Metrics

C.1 BASIC ATTRIBUTES OF SOUND

Noise may be defined as unwanted sound. An acceptable definition of sound is that it is a physical disturbance of the atmosphere that can be detected by the human ear. Factors that influence people's perception of such physical disturbances as "noise" are:

- The magnitude of the sound level.
- The duration of the sound event.
- The number of such events in a given time period (such as a day).
- The time of day of these events.

The results of this analysis qualify these effects in terms of the noise metrics used in this report. These are describe in the following sections.

C.2 A MEASURE OF INSTANTANEOUS SOUND LEVEL

A basic fact of human hearing is that the human ear is more sensitive to sound energy at higher frequencies than at lower frequencies (that is, the ear does not have a "flat" frequency response). Furthermore, the ear's relative sensitivity to different frequencies changes somewhat with the level of the sound. This effect, however, is most pronounced at lower sound levels. Any sound level measure that purports to correlate well with people's subjective assessment of the loudness or noisiness of sound must account for this variable sensitivity to differing frequencies.

One approach for obtaining an accurate correlation between measured sound levels and subjective human response was the introduction of frequency weighing networks in sound level meters. The sound level meter is a device for measuring sound pressure levels. The small pressure fluctuations are detected by an extremely sensitive microphone and transformed into an electrical signal. By means of electronic circuitry, this electrical signal is amplified and displayed on a meter in decibels (dB). With origins dating back to the mid-1930s, the A-weighting network is still in widespread international use today. This network discriminates against the lower frequencies and very high frequencies, to which the ear is less sensitive, according to a relationship approximating a person's subjective reaction in terms of loudness at moderate sound levels.

In past laboratory and field studies, it has been found that people make relative judgments of the "loudness," or the "annoyance" or "disturbance" of sounds that correlate quite well with the A-scale levels of those noises. However, a change of 10 dB in the A-level corresponds roughly to a subjective judgment of the halving or doubling of the loudness or noisiness. In other words, a sound judged to be twice as loud as another sound would only have a sound level approximately 10 dB greater than the first sound (even though the 10 dB change corresponds to a factor of 10 in actual

sound energy). On the other hand, the difference of one or two dB between sounds, although probably detectable if heard within a short time interval, would not be judged to be significantly different in loudness by most observers. Table C-1 shows the relationships between A-weighted sound level and relative loudness for every-day noise sources.

C.3 A MEASURE OF INDIVIDUAL NOISE EVENTS

Of major interest in this report is the noise produced by aircraft during takeoff and landing operations. These noises fall into the broad category of "transient" noises, which come and go in a finite period of time. Aircraft takeoff, landing, and flyover noises may be characterized as sound signals that increase in level, generally over a period of several seconds, to a maximum value, then decrease, and eventually merge into the fluctuating background noise.

Dependent primarily on the type of aircraft, type of operations, and distance from the observer to the aircraft, the maximum flyover noise levels will vary widely in magnitude ranging from levels unnoticed in the presence of other background noises to levels sufficiently high to create feelings of annoyance or to interfere with speech or sleep.

The duration will also vary depending on the proximity of the aircraft, speed, and orientation with respect to the observer. Unfortunately, the maximum noise level rating ignores the duration aspect of the event. Extensive psychophysical research has shown that for two events of the same maximum level, the longer of the two will invariably be rated as the noisier or more annoying.

Over the years, several mathematical models have been proposed to account for this observation. The model that is in common usage today asserts that subjective annoyance is related to the total amount of perceived acoustic energy in the noise intrusion. Computationally, the total energy is determined by measuring the instantaneous A-level at closely spaced intervals in time (e.g., every $\frac{1}{4}$ second) and summing these readings by logarithmic additions. The analyses in this report are based on the SEL (Sound Exposure Level), which is the energy summation of the A-level over the upper 10 dB of the noise signal. The SEL is being widely used to describe the noise of a variety of transportation noise sources.

C.4 A MEASURE OF DAILY NOISE EXPOSURE

Descriptors of individual aircraft noise intrusions are helpful in comparing one aircraft with another or in relating the aircraft noise to other sources of noise in the community. However, community response to aircraft noise is not based on a single event, but on a series of events over the day. Factors that have been found to affect subjective assessment of the daily noise environment include (1) the noise levels of individual events, (2) the number of events per day, and (3) the time of day at which the event occurs. Most environmental descriptors of noise are based on these three factors, although they may differ considerably in the manner in which the factors are taken into account.

TABLE C-1
Loudness and Sound Levels of Everyday Noise

Sound	Sound Level, dB(A)	Relative Loudness (Approx.)	Relative Sound Energy
Jet Plane, 100 Feet	130	128	10,000,000
Rock Music with Amplifier	120	64	1,000,000
Thunder	110	32	100,000
Boiler Shop, Power Mower	100	16	10,000
Orchestral Crescendo at 25 Feet, Noisy Kitchen	90	8	1,000
Busy Street	80	4	1,000
Interior of Department Store	70	2	10
Ordinary Conversation 3 Feet Away	60	1	1
Quiet Automobile at Low Speed	50	1/2	.1
Average Office	40	1/4	.01
City Residence	30	1/4	.001
Quiet Country Residence	20	1/16	.0001
Rustle of Leaves	10	1/32	.00001
Threshold of Hearing	0	1/64	.000001

Source: U.S. Department of Housing and Urban Development Circular 1390.2

Any single-number descriptor of a complex noise environment represents a drastic simplification of the real-world conditions. However, the administrative and general usefulness and the simplicity of a single number descriptor results in widespread use of such measures for regulatory, administrative, and planning purposes. The U.S. Air Force has adopted the average day-night sound level (L_{dn}) as the measure for noise regulations, which is widely employed throughout the country as a descriptor of community noise environments.

The L_{dn} represents the equivalent level (also denoted as average level) over a 24-hour period with the noise occurring at night (10 p.m. to 7 a.m.) multiplied by a factor of 10 (10 dB). The L_{dn} incorporates a 10-dB nighttime weighing for noises occurring between 10 p.m. and 7 a.m. to account for the presumed greater potential disturbance of people by nighttime noise. This presumption is partially substantiated by community complaint studies and social survey data that indicate that the same noise environment is considered more disturbing or annoying during the nighttime than during the daytime. There is a greater need at night for a quiet environment in which to sleep and relax. In most communities, the exterior background noise level decreases during the night by 10 dB or more, and the activity inside homes also decreases. These both contribute to a lowering of interior noise levels. Consequently, any high-level intrusive noise can be expected to be more disturbing during the night.

The L_{dn} may be determined in two different ways. It may be calculated by measuring the noise either continuously or on a discrete sampling basis throughout the 24-hour period. In practical applications, L_{dn} is usually computed by sampling the noise one or more times a second and calculating the equivalent level for each hourly period to obtain hourly noise levels. The L_{dn} is then computed from the set of 24 hourly levels, after adding the appropriate weighing to the night levels.

C.5 L_{dn} CRITERION VALUES

Current Air Force guidelines, in the Air Installation Compatibility Use Zone (AICUZ) programs, stipulate 65 L_{dn} as the upper limit for residential development unless special noise insulation features are incorporated into buildings. The choice of 65 L_{dn} involves an administrative decision that necessarily involves tradeoffs between desire to eliminate all community annoyance with aircraft noise, consideration of economic and political factors, and community and military needs for air transportation.

The choice of a 65 L_{dn} criterion is supported by regulations and administrative standards adopted by other governmental agencies. For example, HUD has adopted an L_{dn} level of 65 dB as the upper limit of acceptable aircraft and non-aircraft noise with regard to residential development and governmental funding for community planning. The L_{dn} value used by the FAA to define residential noise impact areas around airports is 65 dB. A recent American National Standard Institute standard on land use planning with respect to noise also suggests a limit of 65 L_{dn} for residential land use.

The above discussion suggests that the criterion of 65 L_{dn} is reasonable in order to achieve a balance that takes into consideration the air transportation needs of the

community and the desired goals to minimize annoyance and noise interference. However, it is clear that setting a $65 L_{dn}$ criterion will not eliminate all annoyance or community dissatisfaction. And for some activities, the L_{dn} criterion should be supplemented with other criteria regarding levels of individual noise intrusions.

In the absence of aircraft noise, people in suburban and urban areas are exposed to considerable noise due to other sources, the most prevalent of which is motor vehicle traffic. Figure C-1 shows the approximate range of day-night levels for different types of community noise exposure.

C.6 COMPATIBLE LAND USE

Most studies on residential aircraft noise compatibility recommend no residential uses in noise zones (NZ) above $75 L_{dn}$. Usually no restrictions are recommended below $65 L_{dn}$. Between 65 - $75 L_{dn}$ there is currently no consensus. These areas may not qualify for federal mortgage insurance is residential categories according to 24 CFR 51 (adopted July 12, 1979). In many cases, the approval of the U.S. Department of Housing and Urban Development (HUD) requires noise attenuation measures, the Regional Administrator's concurrence, and an Environmental Impact Statement. Past Air Force experience and the lack of definitive criteria do not justify an Air Force recommendation to categorically prohibit residential uses in these areas, although these uses may be undesirable. However, wherever possible, residential uses should be located below $65 L_{dn}$.

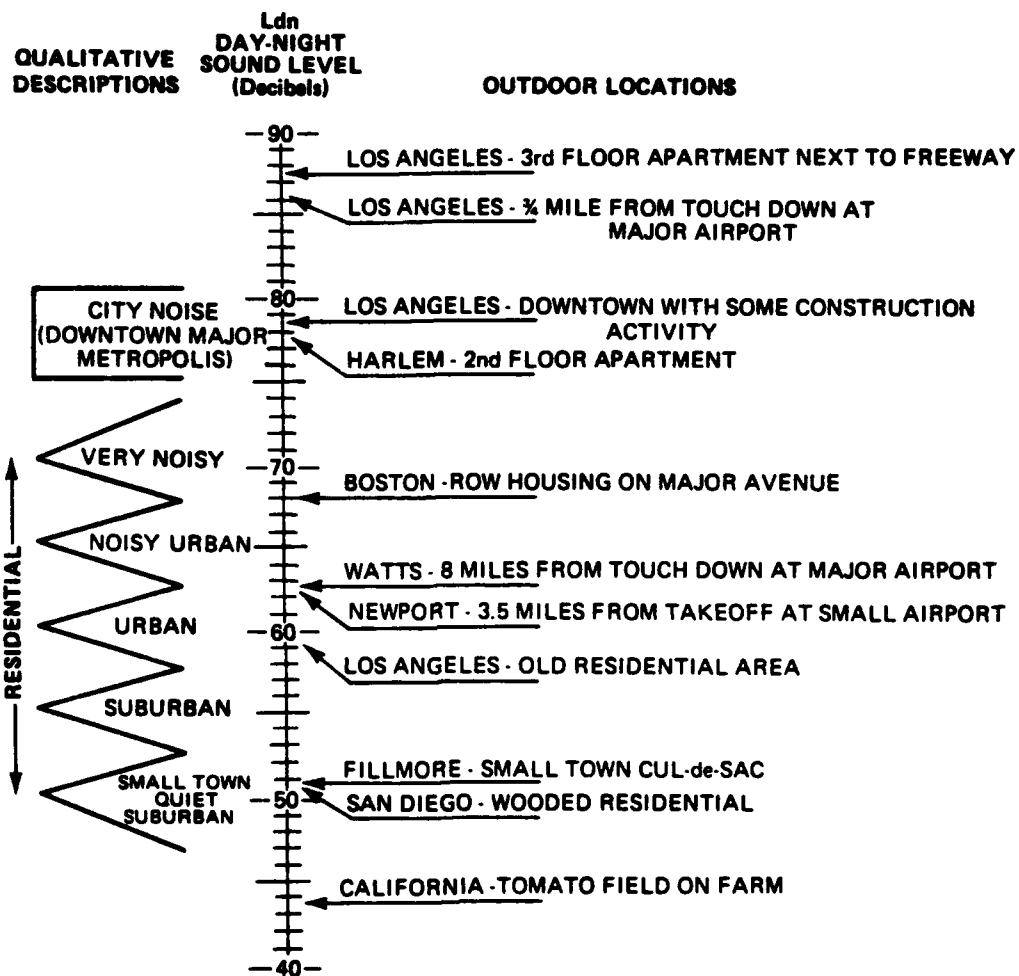
Most industrial/manufacturing uses are compatible in the airfield environs. Exceptions are uses such as research or scientific activities that require lower noise levels. Noise attenuation measures are recommended for portions of buildings devoted to office use, receiving the public, or where normal background noise level is low.

The transportation, communications, and utilities categories have a high noise level compatibility because they generally are not people intensive. When land is used for these purposes, the use is generally very short in duration. Where buildings are required for these uses, additional evaluation is warranted.

The uses of commercial/retail trade and personal and business services categories are compatible without restriction up to $70 L_{dn}$; however, they are generally incompatible above $80 L_{dn}$. Between 70 and $80 L_{dn}$, attenuation should be included in the design and construction of buildings.

The nature of most uses in the public and quasi-public services category requires a quieter environment; attempts should be made to locate these uses below $65 L_{dn}$, or provide adequate attenuation.

Areas where noise levels exceed $75 L_{dn}$ are not generally recommended for recreational uses. Buildings associated with golf courses and similar uses should be sound attenuated.



SOURCE: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, INFORMATION ON LEVELS OF ENVIRONMENTAL SOUND REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH THE ADEQUATE MARGIN OF SAFETY. MARCH 1974, p. 14.

FIGURE C-1
EXAMPLES OF AVERAGE DAY-NIGHT
SOUND LEVELS, L_{dn}

With the exception of forestry activities and livestock farming, uses in the resource production, extraction, and open space categories are generally compatible without restriction.

C.7 NOISEMAP PROGRAM DOCUMENTATION

The NOISEMAP computer program is a comprehensive set of computer routines for calculating noise exposure contours for airport operations. The program was developed under sponsorship of the U.S. Air Force. The program permits calculation of the noise environment in terms of L_{dn} , noise exposure forecast, or community noise equivalent levels. With simple modification of the input data, NOISEMAP also can develop noise level contours, typically in terms of effective perceived noise level or sound exposure level for individual aircraft operations.

L_{dn} contours produced by NOISEMAP are relied upon by the Air Force as the primary descriptor of air base noise exposure. It forms a primary technical tool for the AICUZ program. NOISEMAP is also used by the U.S. Navy, U.S. Army, U.S. Environmental Protection Agency, and several state agencies and consultants to develop noise environmental contours for civil and military airports. NOISEMAP is approved by the Federal Aviation Administration (FAA) for use in FAA-funded airport studies.

The program and underlying technical concepts are very well documented in the technical reports. The basic modeling concepts, guidelines for acquiring noise performance data, application guide, and the basic computer program are described in the following five reports:

Bishop, D.E., Community Noise Exposure Resulting from Aircraft Operations: Application Guide for Predictive Procedure, Air Force Report AMRL-TR-73-105, November 1974 (AD A004818).

Galloway, W.J., Community Noise Exposure Resulting from Aircraft Operations: Technical Review, Air Force Report AMRL-TR-73-106, November 1974 (AD A004822).

Bishop, D.E., and Galloway, W.J., Community Noise Exposure Resulting from Aircraft Operations: Acquisition and Analysis of Aircraft Noise and Performance Data, Air Force Report AMRL-TR-73-107, August 1975 (AD 017741).

Reddingius, N.H., Community Noise Exposure Resulting from Aircraft Operations: Computer Program Operator's Manual, Air Force Report AMRL-TR-73-108, July 1974 (AD 785360).

Horonjeff, R.D., Kandukuri, R.R., and Reddingius, N.H., Community Noise Exposure Resulting from Aircraft Operations: Computer Program Description, Air Force Report AMRL-TR-73-109, November 1974 (AD A004821).

The original computer program operator's manual has been updated to reflect program changes and is available as an Air Force report:

Beckmann, J.M., and Seidman, H., Community Noise Exposure Resulting from Aircraft Operations: NOISEMAP 3-4 Computer Program Operator's Manual, Air Force Report AMRL-TR-78-109, December 1978 (AD A068518/OGA).

Basic noise information for military aircraft is documented in the following six volume report, prepared by the U.S. Air Force Aerospace Medical Research Laboratory:

Speakman, J.D., Powell, R.G., and Cole, J.N., Community Noise Exposure Resulting from Aircraft Operations: Acoustic Data on Military Aircraft, Air Force Report AMRL-TR-73-110, November 1977.

- Vol. 1 - Acoustic Data on Military Aircraft (AD A053699).
- Vol. 2 - Air Force Bomber/Cargo Aircraft (AD A053700).
- Vol. 3 - Air Force Attack/Fighter Aircraft (AD A053701).
- Vol. 4 - Air Force Trainer/Fighter Aircraft (AD A053702).
- Vol. 5 - Air Force Propeller Aircraft (AD A055079).
- Vol. 6 - Navy Aircraft (AD A056217).

A military aircraft noise data digital tape file for use with NOISEMAP is available upon request from:

6570th Aerospace Medical Research Laboratory
AMRL/BBE
Air Force Systems Command
Wright-Patterson AFB, Ohio 45433

Computer programs for computing noise versus distance curves from noise data at single ground locations have been developed by the University of Dayton and are described in the following report:

Mohlman, II. T., Computer Programs for Producing Single-Event Aircraft Noise Data for Specific Engine Power and Meteorological Conditions for Use with USAF Community Noise Model (NOISEMAP), Air Force Report AFAMRL-TR-83-020, April 1983.

Base noise and performance characteristics for major civil aircraft were initially collected and described in several reports prepared under EPA sponsorship:

Galloway, W.J., Mills, J.F., and Hays, A.P., Data Base for Predicting Noise from Civil Aircraft: Flight Profile Prediction, BBN Report 2746R, March 1976.

Bishop, D.E., Mills, J.F., and Beckmann, J.M., Effective Perceived Noise Level Versus Distance Curves for Civil Aircraft, BBN Report 2747R, February 1976.

Bishop, D.E., Mills, J.F., and Beckmann, J.M., Sound Exposure Level Versus Distance Curves for Civil Aircraft, BBN Report 2759R, February 1976.

More recently, the civil aircraft noise and performance data have been reviewed and updated for the FAA. These data are incorporated into the current versions of the FAA's Integrated Noise Model airport noise computer program.

Bishop, D.E., and Beckmann, J.M., Civil Aircraft Noise Data for Computation of Aircraft Noise Contours, BBN Report 4440 (draft), November 1980.

Potter, R.C., and Mills, J.F., Aircraft Flight Profiles for Use in Aircraft Noise Prediction Models, BBN Report 4594 (draft), January 1981.

Potter, R.C., and Mills, J.F., Aircraft Flight Profiles for Use in Aircraft Noise Prediction Models, BBN Report 4594 (draft), January 1981.

Following the original development of NOISEMAP, a series of research and sensitivity studies concerned with various aspects of NOISEMAP assumptions and modeling algorithms has been undertaken. Sensitivity refers to the variability of noise contour size and shape resulting from changes in modeling algorithms or input data. These studies are documented in the following Air Force reports:

Bishop, D.E., Dunderdale, T.C., Horonjeff, R.D., and Mills, J.F., Sensitivity Studies of Community-Aircraft Noise Exposure (NOISEMAP) Predictive Procedure, Air Force Report AMRL-TR-75-115, March 1976 (AD A026535).

- Tone Corrections.
- Runup Weightings.
- Temperature and Pressure Altitude.
- Excess Ground Attenuation and Airframe Shielding Algorithms.

Bishop, D.E., Dunderdale, T.C., Horonjeff, R.D., and Mills, J.F., Further Sensitivity Studies of Community-Aircraft Noise Exposure (NOISEMAP) Prediction Procedures, Air Force Report AMRL-TR-116, April 1977 (AD A041781).

- Tone Corrections.
- Excess Ground Attenuation and Fuselage Shielding Models.
- Climatic Variations.

Fidell, S., Test Plan for Aircraft Runup Noise Penalty Evaluation, Air Force Report AMRL-TR-75-110, March 1976 (AD A026209).

Walker, D.Q., Aircraft Sideline Noise: A Technical Review and Analysis of Contemporary Data, Air Force Report AMRL-TR-76-115, April 1977 (AD A042076).

Walker, D.Q., An Analysis of Aircraft Flyover Noise, Air Force Report AMRL-TR-78-8, April 1978 (AD A058522).

Extended capabilities of NOISEMAP to include noise from helicopters and from special aircraft operations are described in the following reports:

Galloway, W.J., Helicopter Noise Level Functions for Use in Community Noise Analyses, Air Force Report AMRL-TR-78-87, December 1978.

Bishop, D.F., Procedures and Data for Predicting Day-Night Levels for Supersonic Flight and Air-to-Ground Gunnery, BBN Report 3715, prepared for the Air Force Civil Engineering Center (draft), August 1978.

The NOISEMAP program has been modified to permit convenient determination of demographic information within noise contour boundaries, as described in the following reports:

Seidman, H., and Bavely, C., Computer-Aided Collection of Demographic Data within Day-Night Level Contours: Two Test Cases, Air Force Report AMRL-TR-78-39, August 1978.

Seidman, H., Incorporation of Environmental Impact Indices into NOISEMAP, Air Force Report AMRL-TR-81-31, February 1981.

Initial NOISEMAP field validation studies and the development of detailed techniques for field measurement of air base noise for comparison with NOISEMAP predictions have been undertaken. They are documented in the following reports:

Seidman, H., Horonjeff, R.D., and Bishop, D.E., Validation of Aircraft Noise Exposure Prediction Procedure, Air Force Report AMRL-TR-76-111, April 1977 (AD A041674).

Rentz, P.E., and Seidman, H., Development of NOISECHECK Technology for Measuring Aircraft Noise Exposure, Air Force Report AMRL-TR-78-125, May 1980.

Bishop, D.E., Harris, A.H., Mahoney, J., and Rentz, P.E., NOISECHECK Procedures for Measuring Noise Exposure from Aircraft Operations, Air Force Report AMRL-TR-80-45, November 1980.

Lee, R.A., Field Studies of the Air Force Procedures (NOISECHECK) for Measuring Community Noise Exposure from Aircraft Operations, Air Force Report AMRL-TR-82-12, March 1982.

Additional NOISEMAP research studies are underway. Special effort has been made to extend the usability of the program for specific Air Force needs through the development of a special preprocessor program to handle military aircraft noise and performance data. Modeling concepts and algorithms (for instance, those concerned with propagation over ground and the transition between air-to-ground and ground-to-ground propagation) are undergoing continuing study. Modification of NOISEMAP to allow convenient calculation of day-night levels at specified points, rather than

computation at an array of grid positions, is being undertaken. The results of these studies will be described in future Air Force-sponsored reports.

APPENDIX D
Response to Public Comments



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20008



Letter from U.S. Department of the Interior (USDOI), Office of the Secretary,
Washington, D.C., June 7, 1990.

In Reply Refer To:
ER 98/453

JUN 7 1990

Mr. Kevin Marek
HQ SAC/DEVP
Building 500, Room 2D22
Offet AFB, Nebraska 68113-5001

Dear Mr. Marek:

This is in regard to your transmittal of June 4, 1990, requesting the Department of the Interior's review and comments on the draft environmental statement concerning the Realignment of Decade AFB EX.

This is to inform you that the Department will have comments but will be unable to reply within the allotted time as we have just received your transmittal of copies to satisfy our interdepartmental distribution needs. Please consider this letter as a request for an extension of time in which to comment on the statement.

Our comments should be available about July 2, 1990.

Sincerely,

Jonathan P. Deason
Director
Office of Environmental Affairs

Response to Comment 1:

Since the date of his letter, Mr. Deason has given verbal indication that no comments will be made by his office.



UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
Office of Environmental Affairs
Box 3090 - 450 Golden Gate Avenue
San Francisco, California 94102
(415) 536-5200

June 8, 1990

EN90/453

Kevin Marek
NO SAC/DEVP
Building 500, Room 3D22
Offutt AFB, NE 68113-5001

Dear Mr. Marek:

The Department of the Interior has reviewed the Draft
Environmental Impact Statement for the Realignment of Beale AFB,
California and has no comments.

We appreciate the opportunity to review this document.

Sincerely,


Patricia Sanderson Port
Regional Environmental Officer

cc: Director, OEA (w/orig. incoming)
Reg. Dir., PWS

Letter from the USDO Office of the Secretary, San Francisco, June 8, 1990

Response to Comment 2:

Comment acknowledged.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, CA 94105

Letter from the U.S. EPA Region IX, San Francisco, June 8, 1990.

George Gauger, Chief
Environmental Planning Division
U.S. Air Force
HQ SAC/DEVP
Offutt Air Force Base, Nebraska 68113-5001

Dear Mr. Gauger:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) titled REALIGNMENT OF BEALE AIR FORCE BASE, Tuba County, California. Our comments are provided pursuant to the National Environmental Policy Act, Section 109 of the Clean Air Act, and the Council on Environmental Quality's Regulations for Implementing NEPA (40 CFR 1500-1508).

The proposed realignment action involves the relocation of the 323rd Flying Training Wing, Specialized Undergraduate Navigation Training (SUNT), from Mather Air Force Base to Beale Air Force Base. The SUNT includes 14 T-43 and 25 T-37 aircraft, 486 military personnel, 307 families, civilians, and a daily average of 773 students. Beale AFB would undergo construction of approximately 1.7 million square feet of floor area for new facilities over the next three years to accommodate the realignment action. Several existing buildings at Beale would be demolished and/or renovated.

We have rated this DEIS as Category EC-2, Environmental Concerns - Insufficient Information (please see Enclosure 2, "Summary of Rating Definitions and Follow-up Actions"). We have environmental concerns because EPA believes that there is insufficient information in the DEIS to assess the proposed project's compliance with Section 404(b)(1) of the Clean Water Act, including an adequate examination of less-damaging practicable alternatives, the extent of wetlands subject to Section 404 jurisdiction and the adequacy of proposed mitigation to compensate for environmental losses. We also request that the Final Environmental Impact Statement (FEIS) contain additional information and mitigation measures on several project features regulated under the Resource Conservation and Recovery Act (RCRA), as amended by the 1984 RCRA amendments, and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended in 1986. Detailed comments are provided in Enclosure 1.

Response to Comment 3:

Concerns about compliance with Section 404 of the Clean Water Act are specifically addressed in Responses to Comments 6 through 24, below. The USAF is working with the COE, which has permitting authority over construction activities under Section 404, to resolve concerns related to Section 404 compliance. The USAF, aware of EPA responsibilities as a commenting agency for Section 404 Individual Permits, intends to satisfy all Section 404 requirements during the permitting processes.

Response to Comment 4:

Concerns about compliance with RCRA and CERCLA are specifically addressed in Responses to Comments 29 through 45, below. The USAF is committed to fulfilling its obligations under RCRA and CERCLA.

8 1000 1970

We appreciate the opportunity to comment on this DEIS. Please send us three copies of the Final Environmental Impact Statement (FEIS) when it is officially filed with the EPA's Washington, D.C. office. If you have any questions, please call me at 415-556-4383 or have your staff contact Mr. David Tomsovic of my staff at 415-556-5098.

Sincerely,

M. H. K.
for Deanna M. Wieman, Director
Office of External Affairs

Enclosures: 3 (EIS comments; EIS rating sheet; RCRA factsheet)

cc: Phil Lamm, AFRCZ, San Francisco
District Engineer, Army Corps, Sacramento
Jim Bybee, Nat'l Marine Fisheries Service, Santa Rosa
Fish & Wildlife Service, Sacramento
Pat Port, Interior Dept., San Francisco

EPA to Air Force, Realignment of Beale Air Force Base, Yuba County, California - Draft Environmental Impact Statement.

SECTION 404 COMMENTS - CLEAN WATER ACT (CWA) 5 JAN 1991

The DEIS states that Section 404 of the Federal CWA delegates authority to the U.S. Army Corps of Engineers to control development in waterways, including wetlands (Table 1-1, page 1-10). Section 404 regulates the discharge of dredged or fill material into waters of the United States, including "special aquatic sites" such as wetlands and vernal pools.

EPA reviewed the proposed project for compliance with Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials (the Guidelines), promulgated pursuant to Section 404(b)(1) of the Clean Water Act. The Guidelines were enacted to implement Section 404(b)(1) and may be found at 40 CFR 230. Based on our review of the DEIS, EPA has determined that the proposed project, as described in the DEIS, does not appear to comply with the Guidelines.

The DEIS states that construction of the 50-acre CAMS facility and other flightline area structures would not result in "significant adverse impacts to sensitive biological resources" (page 4-13). The proposed gymnasium lot contains a small vernal pool area but its potential loss is considered "insignificant" by the Air Force due to its small size (40 square feet) and the area's previous disturbance. The DEIS also notes that construction of an access road north of the CAMS site would result in the loss of three or four vernal pools along a small drainage. The DEIS also considers these losses to be insignificant because the pools are "small" and "not likely to provide substantial habitat compared to other larger more developed pools," and that this area of the base "does not represent an important vernal pool area." (page 4-13). We have serious concerns with the manner in which the DEIS assesses the wetlands resources which may be lost due to project activities.

Accordingly, for each alternative, the following issues should be fully discussed in the Final Environmental Impact Statement (FEIS) in order to properly evaluate whether the proposed project complies with the Guidelines:

1. Alternatives. The proposed project would result in the loss of riparian and wetland habitats, including vernal pools. The DEIS does not identify the total acreage loss that would occur with the proposed action. Wetlands, including vernal pools, are designated as "special aquatic sites" (40 CFR 230.41, Subpart E) under the Guidelines. Special aquatic sites are accorded a special degree of consideration under the Guidelines due to their important natural resource values, functions and national significance.

Response to Comment 5:

Please refer to response to Comment 3, above. Specific concerns about Section 404 compliance are dealt with in Responses to Comments 6 through 24, below.

Response to Comment 6:

The USAF has considered alternative site locations for major facility components for the SUNT relocation at the CAMS, flightline, and pursuit areas, as discussed in Section 2.2.3 of the FEIS. Considerations for alternative facility siting included minimizing potential impacts to sensitive environmental resources, as well as avoiding identified IRP sites, avoiding interference with existing flight paths and activities (such as clear zones and accident potential zones), general base comprehensive planning, compatibility of the SUNT activities with other similar base activities, and cost effectiveness.

The USAF, as stated in Section 4.5 of the FEIS, fully intends to conform with the requirements of Section 404 of the Clean Water Act and related regulations as they relate to potential impacts to wetland areas. Prior to construction, wetland areas will be delineated in accordance with the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" (1989) and facilities sited to minimize (to the extent feasible) impacts to wetland areas. The USAF has applied to the COE for necessary wetland permits and will implement mitigation measures in accordance with COE recommendations, if necessary.

The planned gymnasium site was chosen after consideration of available land near the flightline that is not dedicated to current or future mission-essential activities. Additional important considerations were the presence of explosive safety zones and accessibility for users. The chosen site is the only appropriately sized lot that fulfilled all the siting criteria.

Response to Comment 7:

Please refer to general information on the siting process in Response to Comment 6, above. The access road to the CAMS site is being rerouted to avoid wetlands.

Response to Comment 8:

The USAF is committed to minimize impacts to wetlands. The COE has been contacted to begin the permitting process. Their determination of the presence of wetlands will be binding, as will any conditions imposed by the COE and commenting agencies, if appropriate.

Response to Comment 9:

The presence and extent of wetlands will be determined in an early phase of the permitting process. Since a wetlands survey has not been completed, exact acreage impacted by the realignment action can not be given at this time. It will be provided in the Record of Decision (ROD) on this action.

8: JUN 1990

The Guidelines stipulate that if a proposed project is not "water dependent" (i.e., requires access or proximity to, or siting within, the special aquatic site to fulfill its basic project purpose), it is presumed that there are less-damaging practicable alternatives to the placement of dredged or fill material in special aquatic sites unless clearly demonstrated otherwise (40 CFR 230.10(a)(3)). The proposed SWRT/realignment action is not "water dependent" and the DEIS does not rebut the presumption that no less-damaging practicable alternatives exist to the placement of fill material in wetlands and vernal pools.

The FEIS should demonstrate that, for all project features, no less-damaging practicable alternatives exist to the placement of fill materials in wetlands and vernal pools (including the new gymnasium lot, access road north of CAMS site, shop and gas facility, academic complex facilities, preferred parasail area, any other project features requiring placement of fill in waters of the United States).

The DEIS does not contain sufficient information regarding alternative sites to proposed project features. The FEIS should include a clear map or maps depicting all waters of the United States (creeks, streams, wetlands, vernal pools, etc.) in the project area. Waters of the United States that will be directly or indirectly affected by the proposed project should be clearly identified and less-damaging practicable alternatives fully analyzed. Practicable alternatives may include a reduction in the size of specific project features and/or a reconfiguration of project locations to eliminate, avoid or minimize adverse impacts. The Air Force must do this in order for the EIS to demonstrate compliance with Section 404.

2. Significant Degradation. Vernal pools and wetland resources have undergone significant losses in California and elsewhere in the nation. Direct losses (from placement of fill), indirect losses and other adverse impacts to waters of the United States (from sedimentation, runoff of pollutants, hydrocarbons, etc.) are considered by EPA to be significant and should be avoided.

The DEIS states that the projected losses are "insignificant" due to the small size of the wetlands and/or lack of significant habitat values. This appears to contradict the statement on page 3-17 of the DEIS that vernal pools and freshwater marshes provide seasonal habitat for migrating waterfowl and shorebirds. However, the DEIS states that the proposed action, in conjunction with the SR-71 drawdown, "will not have significant cumulative impacts to biological resources" (page 4-14).

Additionally, portions of Dry Creek/Best Slough in the vicinity of Beale AFB support a November-December king salmon run (page 3-20). The DEIS states that the proposed realignment action MAY have "potential impacts to salmon spawning areas in Dry Creek/Best Slough" (page 1-4). EPA considers impacts to a salmon fishery to be significant. We request that this potential impact be fully discussed in the FEIS, and adverse impacts avoided or eliminated. We also recommend that your office contact the

Response to Comment 10:

Comment acknowledged.

Response to Comment 11:

The USAF has studied all practicable alternatives for locating necessary facilities. The process by which sites were chosen is described in Response to Comment 6 and Section 2.2.3 of the FEIS. The gymnasium lot is specifically discussed in Response to Comment 6. The access road north of the CAMS site will be rerouted to avoid wetlands, as mentioned in Response to Comment 7. The academic complex facilities do not require placement of fill in waters of the United States. The preferred parasail area, discussed in Section 2.2.3.3 and 4.5, will require stream crossing unless a drainage is rerouted outside this area. The only alternative sites that fulfill the siting criteria require filling washes associated with Hutchinson Creek. One of these alternative sites is not practicable because of safety considerations.

The Shop and Gas facility requires a location at the intersection of major roads and placement so as to minimize traffic impacts (such as would be caused by large numbers of left turns into the facility). The chosen location is currently undeveloped and fits the other siting criteria. Siting this facility at another intersection in the Cantonment area would have caused unacceptable traffic impacts or conflicted with existing or planned land uses.

Response to Comment 12:

The map requested cannot be supplied at this time since a wetland survey of project areas has not been completed. It is anticipated that such a map or maps will be created as part of the 404 permitting process. Waters of the United States that will be affected by the realignment are discussed in Section 4.4, Water Resources, and 4.5, Biological Resources.

Response to Comment 13:

Siting of facilities was undertaken with avoidance of water and wetland resources as a major criteria. The impacts to some vernal pools will be avoided by rerouting the CAMS access road. Final design of all facilities has not been completed. Avoidance of impact to water and wetland resources continues to be considered as this process proceeds. Full compliance with Section 404 will be demonstrated during COE permitting and in the ROD for this action.

Response to Comment 14:

Comment acknowledged.

Response to Comment 15:

It is recognized that vernal pools can provide seasonal habitat for migrating water fowl and other animals. Avoidance and minimization of impacts to water resources and wetlands continues to be a major concern. As discussed in Response to Comments 9 and 12, the exact extent of potentially impacted resources will be determined during the Section 404 permitting process.

Response to Comment 16:

The statement on page 3-20 referenced in this comment reflects a concern raised by the California Department of Fish and Game to the NOI issued by the USAF. The project as currently described in Section 2.0 of the FEIS is sufficiently removed from anadromous fish streams that they will not be adversely affected by construction or operation of SUNT activities. No construction is planned in the eastern portion of the base where impact to Dry Creek/Best Slough might be experienced.

Response to Comment 17:

The NMFS has been contacted. Please see their letter, immediately below, and Responses to Comments 46 through 52.

Response to Comment 18:

17 National Marine Fisheries Service in Santa Rosa, California (Mr. Jim Bybee) since the NMFS has jurisdiction by Federal law on activities affecting anadromous fisheries.

Based on the analysis contained in the DEIS, cumulative impacts to wetlands from the proposed project may be significant. The FEIS should discuss more fully cumulative impacts to biological resources. In light of the potential for significant degradation of aquatic resources posed by this project, the Air Force should make every effort to avoid/minimize adverse impacts to waters of the United States.

3. Wetlands Mapping and Jurisdictional Extent. The DEIS states that some wetlands in the project area were not originally mapped by the U.S. Soil Conservation Service (SCS) or the U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory maps. The FWS mapping effort is advisory information only and should not be used to determine the jurisdictional extent of wetlands under Section 404. Also, the vernal pools are not removed from Section 404 jurisdiction solely because they were not mapped by SCS due to their "small size, shallow impoundments, and low numbers," nor does the fact that the vernal pools were not mapped indicate that they have no value (page 4-13). Rather, the Air Force should contact the U.S. Army Corps of Engineers for a jurisdictional survey.

4. Mitigation. The DEIS does not discuss adequate compensation for losses or adverse impacts to waters of the United States, including wetlands and vernal pools, although the DEIS does propose several mitigation measures (pages 4-14 and 4-15). It is a national goal, announced by President Bush, to ensure a "no net loss" of wetlands. EPA's goal is that, where losses cannot be avoided, there shall be no net loss of wetlands acreage, values and functions.

It should be noted that avoidance of wetlands loss is the first step which the Air Force should take -- other mitigation (e.g., replacement of lost areas, re-establish vegetation, restoration, etc.) is the second step.

The FEIS should identify specific mitigation sites as well as a detailed plan that would include planting requirements, success criteria, maintenance and monitoring schedules, and remedial measures to compensate for losses. The FEIS should compare existing resource values and functions to those to be created through mitigation. Vernal pool mitigation is still experimental. The restoration and creation of proposed mitigation should utilize indigenous species. 100-150 foot buffer zones should be provided to protect existing and created wetlands. Finally, the FEIS should contain a commitment to appropriate mitigation measures developed in coordination with the Army Corps, EPA, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Game.

Response to Comment 19:

18 Please refer to Responses to Comments 3, 8, 9, 11, 12, 13, 15, and 18, above. The SCS and FWS maps were referred to as part of the USAF's planning activities. The COE has been contacted and a jurisdictional survey will be completed as part of the permitting process.

Response to Comment 20:

19 The USAF is committed to implement necessary mitigation for adversely impacted water and wetland resources, including the proposed measures in Section 4.5.2. Any additional mitigations required by the COE, or Section 404 commenting agencies on Individual Permits, will be implemented. The USAF notes, and is striving in its final planning process to achieve, avoidance of wetland loss. For example, the CAMS access road will be rerouted to avoid wetland areas.

Response to Comment 21:

20 A detailed mitigation plan including specific mitigation sites, planting requirements, success criteria, maintenance and monitoring schedules, and remedial measures will be developed as needed as part of the Section 404 permitting process.

Response to Comment 22:

21 Indigenous species will be used to the greatest possible extent for any necessary restoration and creation of mitigation. Buffer zones will be incorporated and managed as required by the COE.

Response to Comment 23:

22 The USAF is committed to act in coordination with the COE, EPA, FWS, NMFS, and California Department of Fish and Game (DFG) throughout Section 404 permitting activities and during mitigation efforts, if such efforts are required. Consultation with COE and California DFG has been initiated. Please see Responses to Comments 17 and 46 through 52 regarding NMFS.

5. Threatened and Endangered Species. The DRLS states that the construction of new facilities and conduct of SWMT operations will not impact any known threatened or endangered vegetative or wildlife species on Beale AFB (page 4-14). We recommend that the project be designed so that impacts to candidate and sensitive species are avoided to better ensure that these species do not undergo further decline and/or loss of habitat critical to their continued viability. We request that the Air Force work with the U.S. Fish and Wildlife Service and the California Department of Fish and Game in this regard.

WATER QUALITY COMPONENTS - CWA

We request that the FEIS identify all surface waters which could be affected by project activities (whether on or off the base). We request that the FEIS identify the protected beneficial uses (e.g., fish spawning, fish migration, wildlife habitat, public drinking water supplies, groundwater recharge, agricultural or livestock uses, etc.) of these water bodies. The FEIS should discuss whether the proposed project would violate State-adopted, EPA-approved water quality standards or whether beneficial uses would be impaired. Finally, we ask that the Air Force work with the Regional Water Quality Control Board to ensure that water quality is fully protected and beneficial uses maintained.

RESOURCE CONSERVATION AND RECOVERY ACT - RCRA

1. Hazardous Waste Volume. We request that the FEIS identify the types and quantities of liquid and solid hazardous wastes generated annually at Beale AFB. It would be useful to show the types and quantities of hazardous wastes that are generated specifically by the SR-71 program, and the types and quantities that will be generated by the GWT/realignment activities. A comparison between SR-71 versus GWT hazardous waste types/volumes would document whether "the deactivation of the SR-71 program will help to offset increases in solid and liquid waste generation expected as a result of the realignment." (page 4-24).

Please note that EPA recently finalized its RCRA Toxicity Characteristic rule. The final rule adds 25 organic chemicals to the eight metals and six pesticides on the existing list of constituents regulated under RCRA. The new rule establishes regulatory levels for the new organic chemicals listed, and replaces the Extraction Procedure (EP) leach test with the Toxicity Characteristic Leaching Procedure. Generators must comply with this regulation within six months of the Federal Register notice. Small quantity generators must comply within one year. The FRLS should assess the effect of this new rule. We anticipate that the types and volume of hazardous waste needing proper storage, treatment and disposal would increase rather than decrease. A copy of the EPA Environmental Fact Sheet (March 1990) on the new rule is attached for reference.

2. Hazardous Waste Minimization. We strongly encourage the Air Force to make hazardous waste minimization an integral component of all environmental development. The NPS states that no

Response to Comment 24:

The USAF will work with the U.S. Fish and Wildlife Service and the California Department of Fish and Game to help ensure that impacts to biological resources will be minimized. The USAF's obligations under the Endangered Species Act extends only to threatened and endangered species, not to candidate and sensitive species, however, steps are planned to minimize impact to burrowing owls, a California species of special concern.

Response to Comment 25:

Baseline information about surface water, including water that may be affected by the realignment, is contained in Section 3.4.2 and Figure 3-4.

Response to Comment 26:

Surface water on and near the base provides fish spawning and migration, wildlife habitat, groundwater recharge (as described in Sections 3.4.1 and 3.4.3.1), and agricultural and livestock uses.

Response to Comment 27:

The ability of the base STP effluent to comply with NPDES permit limits may be impacted by the realignment action. Currently, the limits for boron and cyanide are exceeded and a foaming problem has been found at the discharge from the base STP into Hutchinson Creek. SUNT operations, especially plating activities, may worsen this problem. The base is working with the CRWQCB to identify the source of the current exceedances and eliminate this problem. Section 4.1.1.2 offers potential mitigation measures that may be implemented to address water quality concerns related to wastewater discharge. The project is not anticipated to violate state-adopted, EPA-approved water quality standards or impair beneficial uses in Hutchinson Creek upstream of the NPDES discharge point or in any other drainage.

Response to Comment 28:

The USAF will coordinate with the CRWQCB to help ensure that water quality, both surface and subsurface, is fully protected and beneficial uses maintained.

Response to Comment 29:

Table 3-7 of the FEIS presents annual forecasted quantities of wastes generated at Beale AFB.

Response to Comment 30:

The specific types and quantities of wastes generated as a result of the SR-71 program are not available. Complete information on current SUNT-generated hazardous waste at Mather AFB is not available. Generally, the types of waste will be very similar, being generated primarily from aircraft maintenance operations. The SUNT, however, will include a cleaning and plating shop that would be expected to generate somewhat different waste from current Beale operations such as waste with higher metal content. They SUNT cleaning and plating operation currently in use at Mather AFB generates approximately 3,000 to 4,000 gallons of hazardous waste annually.

Response to Comment 31:

The USAF will comply with this regulation as it applies to the operation of SUNT activities. The issuance of this new rule by EPA is not, however, part of the realignment action which this FEIS addresses.

mitigation is proposed for hazardous waste generation (page 4-25). However, there are a number of strong incentives for the Department of Defense to reduce its hazardous waste burden. Proper disposal of RCRA hazardous wastes is costly. Corrective action at existing facilities is expensive, and substantial liability is associated with hazardous materials and hazardous waste. Siting and permitting new RCRA facilities is a long process. Finally, waste minimization is required by the 1984 RCRA amendments.

A variety of methods may be used to reduce hazardous waste generation, storage and disposal. We strongly encourage the Air Force to adopt a broad range of methods as mitigation to reduce the volume of hazardous waste that require treatment, storage and disposal. Measures may include the following.

- Source separation (segregation) to keep hazardous waste from contaminating nonhazardous waste through management practices that prevent the wastes from coming into contact. This method, widely used by private industry, is a cost-effective way to reduce the total volume of hazardous waste.
- Recycling (recovery and reuse) to remove a substance from a waste and return it to productive use. Solvents, acids and metals are commonly recycled by generators.
- Manufacturing process changes such as the elimination of an inefficient or outdated process that produces a hazardous waste or modifying a process so that it no longer produces hazardous waste.
- Substitution of products to eliminate the use of hazardous materials.

3. Recycling. The DEIS notes that a "potential" mitigation measure is to "vigorously pursue a program to recycle wastes, especially paper, glass and aluminum cans to help minimize landfill use and extend its expected life" (page 4-24). We strongly encourage the Air Force to implement an aggressive solid waste recycling program for plastics as well as paper, glass and aluminum cans. Recycling reduces the need for raw materials and helps to conserve natural resources.

4. Underground Storage Tanks (USTs). The DEIS states that old base area maps show 753 abandoned underground storage tanks in the area previously occupied by Camp Beale (page 3-40). The DEIS identifies several UST mitigation measures, including ground truthing to determine the presence of USTs (page 4-25). The DEIS notes that USTs will be removed in conformance with applicable Federal, State and county regulations, and that geophysical surveys will be conducted in areas not previously surveyed to determine the presence of USTs.

We request that the mitigation measures be modified in the FEIS to require that all UST requirements (including a potential need for groundwater monitoring systems, soil samples and removal of contaminated soils) be completed prior to any SUNT/realignment

1 JUL 1990

Response to Comment 32:

Beale AFB fully intends to minimize hazardous waste generation as it relates to the SUNT realignment and has variations of many of the recommendations listed in this comment already in effect at Beale AFB. It is expected that SUNT operations and activities will be integrated into existing hazardous waste minimization efforts. Current Beale AFB practices include organic solvent recovery, recycling waste oil, and returning lead acid batteries for lead recovery. Additionally, product substitutions have been implemented especially for solvents and degreasers and more substitution opportunities are being sought.

Response to Comment 33:

Currently, the Beale AFB MWR office operates a voluntary recycling program that includes separation, collection, and recycling of paper, including computer paper, office paper, and cardboard; cans (both aluminum and other metals); glass (clear and colored); and plastic bottles. Material is picked up from collection points daily. Consideration is being given to converting to a mandatory program in the near future to improve participation.

Response to Comment 34:

As noted in Section 4.11.2, the USAF will locate and remove USTs in accordance with applicable county, state, and Federal regulations prior to realignment construction.

Response to Comment 35:

The locations of all USTs, especially 753 that may be abandoned, are not definitely known. Additional surveys and initiation of excavation to locate possible USTs and confirm their presence will be conducted before construction in previously developed areas. Therefore, no complete UST map can be prepared at this time. The historic maps showing possible UST locations are available at the Beale AFB Civil Engineering office. The locations on these historic maps must be viewed with some caution since USTs may have been removed since the maps were prepared. In addition, it is not completely clear whether these maps present planned or as-built conditions. A complete discussion of the abandoned USTs, including USTs whose locations have been investigated by magnetic geophysical survey, and the ongoing environmental restoration effort is contained in Installation Restoration Program Phase 2-3 Remedial Investigation Final Draft for Beale Air Force Base, California 95903-5000, dated January 1990 and prepared by CH2M Hill for the USAF. A copy of this report should have been submitted to EPA earlier this year.

Response to Comment 36:

The abandoned USTs are reported to have stored hydrocarbons, especially heating oil. There is no record of any storage of any other material.

Response to Comment 37:

One new tank is planned to store waste oil generated by SUNT aircraft maintenance operations prior to removing oil for recycling (as described in Section 4.11). This tank may be aboveground or underground. The Shop and Gas is expected to require storage tanks for gasoline. Final design for this facility has not been undertaken yet, therefore, the exact number and size of USTs has not been determined. All applicable RCRA requirements for new USTs will be adhered to by the USAF. Heating requirements for new facilities are planned to be satisfied by natural gas-fired boilers, therefore, no heating oil tanks are expected to be required. No other new tank installations are expected. SUNT operations will use existing under- and above ground storage tanks, especially those in the fuel storage area (tank farm) for storage of aviation fuel.

Response to Comment 38:

The construction of new facilities will not impact any Solid Waste Management Units. Impacts of SUNT operations on waste management (including the landfill) are discussed in Section 4.11. No RCRA corrective action is being undertaken at Beale AFB.

We request that the FEIS contain a map depicting the location of USTs in relation to SUNT/realignment actions and briefly discuss any environmental restoration activities which the Air Force has already performed. If possible, the FEIS should identify what was stored in the USTs -- was it solely hydrocarbons or were CERCLA "hazardous substances" stored or disposed of in the USTs?

The FEIS should discuss whether the Air Force proposes to install any new tanks for the proposed project and/or utilize existing tanks, and whether these tanks would be aboveground or underground. If the use of USTs is proposed, the FEIS should note that USTs installed after December 1988 must meet the RCRA requirements for new USTs concerning correct installation, spill and overfill prevention, corrosion protection and leak detection. USTs installed prior to December 1988 must meet requirements for corrosion protection, spill-overfill prevention, and leak detection.

5. Solid Waste Management Units (SWMUs)/Corrective Action. The FEIS should contain a map identifying all SWMUs which could be affected by the proposed project. SWMUs may include landfills, surface impoundments, waste piles, lagoons, fire fighting training areas and sludge disposal areas. The FEIS should discuss whether the proposed project could affect any RCRA corrective actions undertaken by the Air Force at Beale AFB.

HAZARDOUS SUBSTANCES - COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT, AS AMENDED BY SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (CERCLA/SARA)

We appreciate the Air Force including Table 3-8 in the DEIS (Beale AFB Sites Summary under the Installation Restoration Program). It identifies 24 sites for which the Air Force recently completed a major field investigation on contamination by hazardous substances.

All sites proposed for SUNT/realignment actions must be evaluated to determine if hazardous substances are present. The FEIS should indicate how the Air Force plans to determine if additional CERCLA hazardous substances are present in those areas prior to any irretrievable commitment of resources for the proposed project.

The FEIS should contain a firm commitment that future SUNT/realignment actions are fully consistent with CERCLA/SARA and the National Contingency Plan (NCP). The FEIS should discuss how the Air Force will comply with the procedural and substantive provisions of CERCLA/SARA and the NCP if CERCLA hazardous substances are encountered during project activities. The FEIS should contain a commitment that Air Force obligations under CERCLA/SARA and the NCP take priority over SUNT developments, should hazardous substances contamination be discovered during SUNT planning or construction phases. If SUNT sites are not contaminated,

Response to Comment 39:

Comment acknowledged.

Response to Comment 40:

The Beale AFB IRP, described in Sections 3.11.4 and 4.11, has identified potentially contaminated areas after review of the entire base. An additional investigation of these potentially contaminated areas has recently been completed (CH2M Hill, 1990). The presence of potentially contaminated areas was a major consideration when sites were proposed for realignment related actions. Only the large area of the base, designated ST-23, which includes the entire area previously used by Camp Beale, is overlapped by planned development activity as part of the realignment. The USAF's plans for development include those discussed in Sections 3.11.4, 3.11.5, and 4.11 and in Response to Comment 35, above.

Response to Comment 41:

The USAF is committed to acting in accordance with all applicable legislated and regulatory requirements including applicable requirements in CERCLA, SARA, and the NCP.

Response to Comment 42:

The USAF has taken care to locate planned SUNT facilities away from potentially contaminated sites. However, unsuspected contamination may be encountered during facility construction. Steps to discover reasonably foreseeable contamination have already been discussed in response to Comment 40, above, and in referenced sections of the document. Section 4.11 of the FEIS discusses USAF plans for handling contamination at construction sites.

planning for development may proceed if the development does not create a negative impact on CERCLA and/or RCRA remedial efforts, whether in the immediate vicinity or elsewhere on the base. Finally, we request that the Air Force closely coordinate SUNT actions with the California Department of Health Services, the Regional Water Quality Control Board and local health and environmental agencies to ensure that the SUNT project is not in conflict with Federal or State environmental restoration requirements.

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-ACT OF 1986 (Title III of the Superfund Amendments and Reauthorization Act)

Title III of SARA established requirements for Federal, State and local governments and industry regarding emergency planning and "community right-to-know" reporting on hazardous and toxic chemicals. Title III is designed to encourage and support emergency planning for responding to toxic or chemical accidents; and to provide State and local governments and the public with information on the presence of hazardous chemicals in their communities and releases into the environment (air, water, soil). Title III's provisions consist of four major sections: emergency planning (Sections 301-303); emergency response notification (Section 304); community right-to-know reporting requirements (Sections 311-312); and toxic chemical release reporting emissions inventory (Section 313).

EPA recognizes that Federal agencies/Federal installations are not legally obligated to comply with Title III's requirements, since Federal agencies are not included in the law's definition of "person." However, EPA has encouraged voluntary compliance by Federal agencies and has urged all Federal facilities to comply with all of Title III's reporting requirements.

In response to Title III, the Department of Defense (DOD) issued a policy directive on July 3, 1987 (attached) to each of the armed services concerning Title III's applicability to DOD facilities. The directive stated that DOD components should respond to the requirements of Sections 301(c), 303(d)(1), and 304 (Subtitle A, Emergency Planning and Notification). The directive stated that DOD facilities need not comply with Subtitles B and C of Title III.

The Air Force issued its own Title III Guidance on November 9, 1987. The Air Force has requested that its installations comply with several of the major provisions of Title III. We request that the FEIS discuss how the Air Force will ensure the proposed project's consistency with the requirements of DOD's Title III policy directive. This may include the adoption of appropriate mitigation measures at Beale AFB if the base has not already done so (e.g., participation in regional emergency planning with State and local authorities; appropriate notification of State/local emergency response commissions when reportable quantities of toxics are released into the environment; voluntary participation for releases below reportable quantities).

Response to Comment 43:

The USAF is fully committed to fulfilling its obligations under CERCLA, SARA, and the NCP in all actions including the realignment of Beale AFB. No impact on CERCLA or RCRA remedial efforts is expected from the realignment action.

Response to Comment 44:

The USAF will coordinate SUNT actions with the California Department of Health Services, the Regional Water Quality Control Board, and local health and environmental agencies to ensure that the SUNT project is not in conflict with Federal or State environmental restoration requirements.

Response to Comment 45:

The DOD's Title III policy directive is guidance for bases. It does not create any obligation on the part of Beale AFB. Currently, Beale AFB does not voluntarily comply with SARA Title III Subtitle A. The realignment of Beale AFB is not expected to affect this situation.

SUMMARY OF FINDING DEFINITIONS AND FOLLOW-UP ACTION*

Environmental Impact of the Action

NO-Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EO-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantive changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EP-Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."



Environmental Fact Sheet

United States
Environmental Protection
Agency
Office of Solid Waste

Office of Solid Waste
and Emergency Response
Washington, DC 20460

EPA-330-SW-89-045
March 1990

TOXICITY CHARACTERISTIC RULE FINALIZED

The final Toxicity Characteristic rule adds 25 organic chemicals to the eight metals and six pesticides on the existing list of constituents regulated under RCRA. The rule also establishes regulatory levels for the new organic chemicals listed, and replaces the Extraction Procedure leach test with the Toxicity Characteristic Leaching Procedure. Generators must comply with this regulation within six months of the date of notice in the Federal Register; small quantity generators must comply within one year.

BACKGROUND

On June 13, 1988, the Environmental Protection Agency (EPA) proposed to revise the existing toxicity characteristic, one of four characteristics used by the Agency to identify hazardous waste to be regulated under Subtitle C of the Resource Conservation and Recovery Act (RCRA). The proposed rule was designed to refine and broaden the scope of the RCRA hazardous waste regulatory program, and to fulfill specific statutory mandates under the Hazardous and Solid Waste Amendments of 1984.

Under current regulations, EPA uses two procedures to define wastes as hazardous: listing and hazardous characteristics. The listing procedure involves identifying industries or processes that produce wastes that pose hazards to human health and the environment. The second procedure involves identifying properties or "characteristics" that, if exhibited by any waste, indicate a potential hazard if the waste is not properly controlled. Toxicity is one of four characteristics that must be considered when identifying a waste as hazardous. The others are ignitability, reactivity, and corrosivity.

The proposed version of the new rule added 38 new substances to the Toxicity Characteristic list; 13 of these constituents are not included in the final version due to technical difficulties in establishing appropriate regulatory levels. EPA bases all regulatory levels for hazardous chemicals on health-based concentration thresholds and a dilution/attenuation factor specific to each chemical. A concentration threshold

Indicates how much of the chemical adversely affects human health, while the dilution/attenuation factor indicates how easily the chemical could seep for "leach" into ground water. The levels set in the Toxicity Characteristic (TC) rule were determined by multiplying the health-based number by a dilution/attenuation factor of 100.

The introduction of the TC rule in 1986 generated extensive public comment on a variety of issues. The TC involves a new "modeling" approach, a mathematical computer model, to simulate what happens to hazardous waste in a landfill. Results from the Toxicity Characteristic Leaching Procedure (TCLP), a new test that is part of the TC rule, are more reproducible than results from the old Extraction Procedure (EP) leach test, and the new test is easier to run.

Following the 1986 proposal, EPA published several supplemental notices in an effort to evaluate and incorporate public comments before finalizing the rule.

ACTION

EPA is finalizing the regulatory levels for 25 of the 38 constituents of concern that were identified in the proposed Toxicity Characteristic rule. Regulatory levels for the remaining 13 constituents will be proposed at a later date.

A waste may be a "TC waste" if any of the chemicals listed below are present in waste sample extract or leachate resulting from application of the TCLP to that waste. If chemicals are present at or above the specified regulatory levels, the waste is a "TC waste," and is subject to all RCRA hazardous waste requirements. Regulatory levels established under the EP toxicity characteristic remain the same, but require application of the new test.

Waste generators who have already notified the Agency that they generate other hazardous wastes and who have obtained an EPA Identification number for their facility are not required by this rule to notify EPA that they now generate a "TC waste." Facilities that are permitted to treat, store, or dispose of hazardous waste, however, may require new or modified permits to handle "TC waste," and should contact their EPA Regional office for more information.

Implementation of the TC rule will initially be the responsibility of EPA's Regional offices. State hazardous waste programs must modify their regulations to reflect the requirements of the TC rule before they can be authorized for implementation.

The following constituents are now regulated under the Toxicity Characteristic rule. Waste generators must determine the levels present in their waste sample extract or leachate, based either on their knowledge of their processes or by application of the TCLP.

New Constituents/Regulatory levels	Old EPA Constituents/Regulatory levels
Benzene ... 0.50 mg/l	Arsenic ... 5.0 mg/l
Carbon tetrachloride ... 0.50 mg/l	Barium ... 100.0 mg/l
Chloroform ... 0.03 mg/l	Cadmium ... 1.0 mg/l
Chlorobenzene ... 100.0 mg/l	Chromium ... 5.0 mg/l
Chloroform ... 0.03 mg/l	Lead ... 5.0 mg/l
m-Cresol ... 200.0 mg/l	Mercury ... 0.3 mg/l
o-Cresol ... 200.0 mg/l	Selenium ... 1.0 mg/l
p-Cresol ... 200.0 mg/l	Silver ... 5.0 mg/l
1,4-Dichlorobenzene ... 7.5 mg/l	Endrin ... 0.02 mg/l
1,2-Dichlorobenzene ... 0.50 mg/l	Lindane ... 0.4 mg/l
1,1-Dichloroethylene ... 0.70 mg/l	Methoxychlor ... 10.0 mg/l
2,4-Dinitrochlorobenzene ... 0.13 mg/l	Toxaphene ... 0.5 mg/l
Heptachlor (and is hydrolyzed) ... 0.008 mg/l	2,4-Dichlorophenoxyacetic acid ... 10.0 mg/l
Hexachlor-1,3-butadiene ... 0.5 mg/l	2,4,5-Trichlorophenoxypropionic acid ... 1.0 mg/l
Hexachlorobenzene ... 0.13 mg/l	
Hexachlorocyclopentadiene ... 3.0 mg/l	
Methyl ethyl ketone ... 200.0 mg/l	
Nitrobenzene ... 2.0 mg/l	
Polychlorinated biphenyls ... 100.0 mg/l	
Pyridine ... 5.0 mg/l	
Tetrachloroethylene ... 0.7 mg/l	
Trichloroethylene ... 0.5 mg/l	
2,4,5-Trichlorophenol ... 400.0 mg/l	
2,4,6-Trichlorophenol ... 2.0 mg/l	
Vinyl chloride ... 0.20 mg/l	

Many Underground Storage Tank (UST) sites are regulated under Subtitle I of RCRA. The Toxicity Characteristic rule will not apply to UST petroleum-contaminated media and debris regulated under Subtitle I until the Agency completes a number of studies of the impacts of the TC on these wastes. During the study period, UST sites will continue to be regulated under Subtitle I of RCRA.

Listed wastes, unlike characteristic wastes such as a "TC waste," can be removed from EPA's lists of hazardous wastes through a process called

- If *m*- and *p*-Cresol concentrations cannot be differentiated, the total cresol concentration is used. The regulatory level for total cresol is 200.0 mg/l.
- Quantitation limit is greater than the calculated regulatory level. The quantitation limit, therefore, becomes the regulatory level.
- The Agency will propose a new regulatory level for this constituent, based on the latest toxicity information.

deleting. Deleting determinations are made on a case-by-case, site-specific basis. Although it is not discussed in the preamble to the TC rule, the guidance for submitting delisting petitions will be modified in the near future to reflect the replacement of the EP leach test with the Toxicity Characteristic Leaching Procedure. Notification of the effective date for this change will appear in a future Federal Register notice.

CONCLUSION

Based on consideration of 12 affected industries, EPA estimates that the Toxicity Characteristic rule will bring a significant volume of additional wastewaters, solid waste, and sludge under the control of its hazardous waste regulations. The rule will bring a large number of waste generators under Subtitle C regulation for the first time, and many treatment, storage, and disposal facilities will require new or modified permits to handle "TC waste."

The Agency strongly encourages industry to reduce the generation of all hazardous wastes through pollution prevention and waste minimization practices. For information and publications on pollution prevention options, contact the toll-free RCRA Hotline number listed below.

TC Impact on Used Oil Regulation

Used oil that is disposed of, rather than recycled or burned for energy recovery, is regulated as a hazardous waste under Subtitle C if it exhibits any of the four characteristics described above. The Toxicity Characteristic rule adds a number of substances to the toxicity list that may bring previously "nonhazardous" used oil under Subtitle C regulation.

Currently, hazardous used oil that is recycled by being burned for energy recovery is minimally regulated under RCRA (a variety of administrative requirements must be met). Used oil that is recycled in any other way is currently exempt from Subtitle C regulation. These regulations for recycled oil are not affected by the Toxicity Characteristic rule. The Agency is currently determining how best to regulate used oil, and is working to develop standards to ensure proper management of used oil that may pose a threat to human health or the environment.

CONTACT

EPA is distributing information materials to trade associations representing those industries potentially affected by the Toxicity Characteristic rule. These materials describe constituents of concern specific to each affected industry, and include compliance guidelines for newly regulated generators. To order copies of these materials, a copy of the Federal Register notice, or for further information, contact the RCRA Hotline Monday through Friday, 8:30 a.m. to 7:30 p.m. EST. The national toll-free number is (800) 424-9346; for the hearing impaired, the number is TDD (800) 553-7672. In Washington, D.C., the number is (202) 382-3000 or TDD (202) 475-9852.



THE OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301-2000

PRODUCTION AND
LOGISTICS
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JUL 3 1987

MEMORANDUM FOR DEPUTY FOR ENVIRONMENT, SAFETY AND OCCUPATIONAL
HEALTH, OASA (24L)
DEPUTY DIRECTOR FOR ENVIRONMENT, OASD (S&L)
DIRECTOR FOR ENVIRONMENT, SAFETY AND OCCUPATIONAL
HEALTH, (S&P/RIO)
DEFENSE LOGISTICS AGENCY (DLA-W)

SUBJECT: Applicability of Title III of the Superfund Amendments
and Reauthorization Act of 1986 (SARA) to the
Department of Defense

Title III of SARA is known as the Emergency Planning and
Community Right to Know Act of 1986. Its purpose is to protect
communities living near commercial industrial facilities from
catastrophic releases of toxic substances such as the tragic
release in Bhopal, India in 1984. Title III, by its wording,
does not apply to Federal facilities. However, DoD endorses the
overall objective of the Act, which is to protect the public in
the event of a release of toxic materials.

As a matter of policy, although neither the substantive nor
procedural aspects of Title III apply to DoD, all DoD components
should comply with the conceptual objectives of the act to the
extent practicable. Such concepts are found in Sections 301(c),
303(d)(1), and 304 of Subtitle A - Emergency Planning and
Notification. Subtitles B and C are procedural, and DoD
components should not respond to those requirements.

As guidance, it is suggested that preventative programs such
as Spill Prevention, Control and Countermeasures (SPCC) plans be
upgraded to include hazardous materials. Response programs such
as Spill Contingency Plans (SCP) should include requirements for
training On Scene Coordinators (OSCs) in hazardous materials
response, and notification of Local Emergency Planning Committees
(LEPCs) in the event of a release of a reportable quantity of
material. Also, each installation should identify one official
to act as the point of contact for local preparedness committees
such as the LEPC.

Carl J. Schatz
Deputy Assistant Secretary of Defense
(Environment)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region, MCB
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

June 12, 1990 F/SWR13

Kevin Marek
HQ SC/DEVP
Building 500, Room 3D22
Offutt AFB, Nebraska 68113-5001

Dear Mr. Marek:

Today we received, by overnight mail, a copy of the draft "Environmental Impact Statement for Realignment of Beale Air Force Base, April 1990." This was sent by J. Tim Ensmainger, Oak Ridge National Laboratory.

We quickly reviewed the report, examining actions that may affect anadromous fish species, namely salmon and steelhead trout. The report acknowledges the presence of king (chinook) salmon in Dry Creek and Best Slough, both tributaries to Bear River, an important salmon stream.

Without examining the project site, our recommendations relate to routine protective measures associated with construction and urban activities that could affect stream habitat quality.

Of particular concern is the protection and possible enhancement of habitat quality, namely water quantity and quality, wetlands contiguous to streams, riparian vegetation, and stream habitats. We suggest that the following habitat-related issues be examined and discussed in the final Environmental Impact Report:

1. Streambed gravel habitat is especially critical to spawning salmon. Gravel consistency of rock diameters ranging from one to four inches is suitable spawning habitat. These gravels can be affected by siltation. Any construction activities should be designed to prevent any runoff (construction water or stormwater) from entering Dry Creek or Best Slough. Erosive materials should be captured in sediment ponds. Sediments are a major impact to stream and streambed quality. 46
2. Water quality in the two stream should be protected during and after construction. Oil and grease traps should be installed on all stormwater lines leading to Dry Creek and Best Slough. Construction oils, lubricants and fuels are water contaminants that degrade fishery habitat. Properly installed and maintained traps can reduce this contaminant load. Urban contaminants that enter storm drains include oil, 47

48



Letter from National Marine Fisheries Service, California, June 12, 1990.

Response to Comment 46:

Please refer to Response to Comment 16, above. Erosion control is also addressed in Section 4.2.2.

Response to Comment 47:

Please refer to Response to Comment 16, above.

Response to Comment 48:

The realignment action is not expected to add or change the stormwater currently entering Dry Creek or Best Slough since no part of the action is near these streams. Therefore, the nature and amount of stormwater entering these streams is not considered in this FEIS.

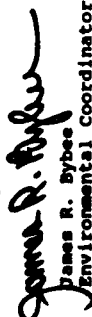
Response to Comment 49:

Please refer to Response to Comment 48, above.

49	grease, solvents, detergents, pesticides and herbicides. These provide substantial damage to stream biota. The final EIS should describe the means proposed to prevent these common contaminants from entering the streams.	
50	3. Wetlands contribute considerable benefits to fisheries, although these benefits are not always obvious. They stabilize soils, provide some flood protection, remove many stormwater contaminants and produce many food organisms consumed by juvenile fish. Natural wetlands and wetland functions should be preserved. New wetlands could be constructed to further benefit good water and habitat quality, not only as project mitigation, but as general habitat improvements.	Response to Comment 50: Please refer to Responses to Comments 8, 9, 13, 15, 18, 20, 21, and 23, above.
51	4. Riparian vegetation is essential to good salmon habitat. It provides a shade canopy over streams and controls water temperatures. It provides another food-producing ecosystem as well as organic matter and large woody debris, important stream structures that control stream velocities and create pools and cover.	Response to Comment 51: Please refer to Response to Comment 16, above.
52	Although most construction and subsequent activities appear in the Hutchinson Creek drainage (a non-salmon stream), the EIS should discuss existing and potentially restorable fish habitat provided in Dry Creek and Best Slough.	Response to Comment 52:

Realignment construction and activities will not occur in the Dry Creek/Best Slough drainage. No impact is expected from this action on fish habitat in either of these streams. Therefore, fish habitat in these streams is not discussed in this FEIS.

If you have questions concerning these comments or wish to discuss the project or our concerns further, I can be reached at the letterhead address or telephone (707) 578-7513.

Sincerely,

 James R. Bybee
 Environmental Coordinator
 Northern Area

Resources Building
1416 Ninth Street
Sacramento, CA 95814
(916) 445-5064
TDD (916) 324-4884

California Conservation Corps
Department of Housing and Redevelopment
Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Parks and Recreation
Department of Water Resources

GEORGE DEUKMEJIAN
GOVERNOR OF
CALIFORNIA



THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

As requested by Board
California Coastal Commission
California Labor University
California Water Management
Board
California River Board
Energy Resources Conservation
And Development Commission
San Francisco Bay Commission
State Coastal Commission
State Coastal University
State Lands Division
State Reclamation Board
State Water Resources Control
Board
Regional Water Quality
Control Board

U. S. Department of the Air Force
HQ SAC/DEVF
ATTN: Mr. Kevin Marek
Building 500, Room 3D22
Offutt AFB, NE 68113-5001
June 8, 1990

Dear Mr. Marek:

The State has reviewed the Draft Environmental Impact Statement (EIS) for Realignment of Beale AFB, Sutter County, California, submitted through the Office of Planning and Research.

We coordinated review of this document with the State Lands and Public Utilities Commissions, the Air Resources, Reclamation, and Solid Waste Management Boards, the Central Valley Regional Water Quality Control Board, and the Departments of Conservation, Fish and Game, Health Services, Parks and Recreation, Transportation, and Water Resources.

None of the above-listed reviewers has provided a comment regarding this proposed project. Consequently, the State will have no comments or recommendations to offer.

Thank you for providing an opportunity to review this project.

Sincerely,

W. Dell
for Gordon F. Snow, Ph.D.
Assistant Secretary for Resources

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(916) 90040056

DEPARTMENT OF FISH AND GAME

P.O. BOX 2400
SACRAMENTO, CALIFORNIA 95834-2400

(916) 445-3533



June 21, 1990

Mr. Kevin Marek
HQ SAC/DEVP
Building 500, Rm. 3D22
Offutt AFB, Nebraska 68113-5001

Dear Mr. Marek:

The Department of Fish and Game (DFG) has reviewed the Draft Environmental Impact Statement (DEIS) for realignment of Beale Air Force Base (AFB). The 323rd Flying Training Wing now located at Mather AFB will be relocated to Beale AFB and will require construction of approximately 1.7 million square feet of new facilities.

The DFG has the following comments and recommends that further discussion within the DEIS should include:

1. A qualified biologist and botanist should conduct on-site surveys and use DFG's Natural Diversity Data Base record search services for any listed or special concern plants or animals. 54
2. Preliminary surveys of vernal pools at Beale AFB indicate that there are some outstanding vernal pool resources on the base. Vernal pools occur on all three soil types found on base, a whole range of vernal pool habitats are represented, and the pools have not been overgrazed. In general, the DEIS does not do an adequate job of describing these resources, their significance, and how adverse impacts to the vernal pools will be avoided to the greatest possible extent. All wetlands should be delineated. Potential impacts to wetlands should be identified and quantified. 55
- A detailed mitigation plan should be developed that is based upon the principle of "no net loss" of wetland habitat values or acreage. No net loss of wetlands is a policy of the DFG and developing a plan to prevent their loss may be necessary to also meet federal policies regarding wetlands. 56
3. To protect and maintain riparian wetland systems, the DFG recommends avoidance of disturbance through the incorporation of 50-foot nondevelopment setback buffers above the banks of intermittent drainages and 100-foot nondevelopment setback 57

Letter from the California Department of Fish and Game, June 21, 1990

Response to Comment 54:

The USAF's obligations under the Endangered Species Act does not include such a survey nor is the USAF obligated to consider plants or animals of special concern. Listed species are not known or expected to occur on Beale AFB in areas that may be affected by the realignment action.

Response to Comment 55:

The USAF acknowledges the existence of vernal pools on Beale AFB and the special significance of vernal pool habitat in California. As discussed in Responses to Comments 13 and 20, the CAMS access road will be rerouted to avoid vernal pools. The only remaining vernal pool impact will be at the flightline gym site where one coyote thistle community and two trees may be relocated pending results of consultation with the California DFC

Response to Comment 56:

All potentially impacted wetlands will be delineated and potential impacts will be identified and quantified during the Section 404 permitting process, as already discussed in Responses to Comments 8 and 9.

Response to Comment 57:

Please refer to Response to Comment 21, where this has been previously addressed.

Response to Comment 58:

Please refer to Response to Comment 22, above.

June 21, 1990

buffers above the banks of all ponds or perennial watercourses. These buffers should be expanded if necessary to protect any additional wetland resources. This buffer should be designated on the Final Tentative Parcel Map for management as Open Space in perpetuity.

4. Projects located adjacent to buffers should be required to include the following provisions:

- a. No fill shall be placed within buffers either during or after construction.
- b. Grading is prohibited within buffers.
- c. All vegetation within buffers shall be protected during construction.

5. Oil/grit separators, detention ponds, and other means of removing pollutants and sediments from water originating from surfaced areas should be installed and maintained (e.g., detention ponds). See the attached drawings of the Jensen Precast Oil-Sand Interceptor. Water quality and means of protecting it from urban pollutants should be discussed.

6. An assessment should be made of the ability of existing stream channels to handle future peak water flows without flooding downstream neighbors or streambed alteration. The increased area covered with impervious material will increase those peak flood flows. We recommend the construction of marsh lands to hold those additional waters until the peak flow passes. The marsh vegetation also provides a filtering mechanism for removing some pollutants and provides wildlife habitat. The marsh/wetland areas cannot be used as mitigation due to the dredging of silt which is occasionally needed.

7. For projects that are unable to avoid impacts to stream zones or wetland resources, such as sewer trunk establishment or flood control projects impacting riparian or wetland habitat, mitigation must be identified within the appropriate location in this DEIS. The DEIS should include identification and quantification of vegetation impacted. Complete revegetation plans must be included to assure no net loss of wetland acreage or values. Detailed monitoring plans should be discussed in the document to assure compliance and satisfactory results (see below).

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Response to Comment 59:

Please refer to Response to Comment 22, above.

Response to Comment 60:

The realignment action is not expected to cause exceedances of water quality standards due to stormwater runoff from surfaced areas; therefore, no mitigation measures such as oil/grit separators or detention ponds are necessary. The relatively small amount of additional surfaced area resulting from the realignment will not generate sufficient quantities of urban pollutants to impact water quality.

Response to Comment 61:

The realignment action will not significantly impact the ability of existing streams to handle peak water flow (Sections 3.4.2 and 4.4). A relatively very small increase is expected in area covered by impervious material. Therefore, construction of marsh lands is not necessary to mitigate impacts from the realignment.

Response to Comment 62:

Please refer to Responses to Comments 20 and 21, above, where this has been previously addressed.

Response to Comment 63:

Please refer to Response to Comment 9, above.

Response to Comment 64:

Please refer to Responses to Comments 21 and 22, where this has been previously addressed.

Response to Comment 65:

Please refer to Response to Comment 21, above.

Mr. Kevin Marek	-3-	June 21, 1990	Response to Comment 66:
8. A survey should be conducted and mitigation plan should be prepared for the loss of burrowing owl (<u>Atene cunicularia</u>) habitat.			66
SPECIFIC COMMENTS:			
Page 3-16, Section 3.5.1.1, paragraph 3:			
The Soil Conservation Service (SCS) wetland inventory mentioned did not delineate all wetland resources. Vernal pools were mapped as vernal pool areas with only the largest pools being delineated. A pool-ry-pool vernal pool and watershed survey and delineation should be required. All vernal pools should be considered wetlands and dealt with in the permit process accordingly. The DFG recommends that the DEIS include, as a priority, the avoidance of impacts to vernal pools and the immediate watershed necessary to sustain them.			67
Page 3-16, Section 3.5.1.1, paragraph 4:			68
This paragraph should be expanded to give the reader a clearer understanding of the significance of vernal pool habitats in California. This discussion falls to mention waterfowl and shorebird use of vernal pools (seasonal wetlands), increasing rarity due to land development, biological significance as a unique natural community, and significance in terms of habitat for rare plants and their associated insect faunas.			69
Page 3-17, Section 3.5.1.2, paragraph 1:			
Boggs Lake dodder (<u>Cuscuta howelliana</u>) and dwarf downingia (<u>Downingia humilis</u>) should be included in Table 3-4 as Sensitive Species. In addition, a historical occurrence for tricolored blackbird (<u>Agelaius tricolor</u>), a Federal category 2 candidate, is known to occur on the Yuba River near the northern boundary of Beale AFB. Considering the freshwater marsh resources on Beale AFB, a survey should be carried out for this species and it should also be added to Table 3-4.			70
Page 3-17, Section 3.5.1.2, paragraph 2:			
The DFG did not conduct a vernal pool survey at Beale AFB in May 1985. A few staff members from the DFG's Natural Diversity Data Base visited the base for a single day on May 6 to examine the vernal pool resources on Beale and to begin a survey for sensitive plants. In the DFG memorandum cited in this report, R.F. Holland specifically pointed out that "...Our one-day visit certainly would not qualify as an exhaustive survey for sensitive plants at Beale...". The first sentence of paragraph 2 is incorrect and misleading and should be changed accordingly.			72

Response to Comment 71:

The tricolored blackbird has been added to Table 3-4. A California DFG biologist and the base Natural Resource Coordinator will conduct a reconnaissance of freshwater marsh at the proposed Shop and Gas location for tricolored blackbirds. If birds are located in the area to be affected by the Shop and Gas, the USAF will work with DFG to prevent adverse impacts. No other freshwater marsh resources will be disturbed by the realignment action.

Response to Comment 72:

The text of Section 3.5.1.2, paragraph 2 has been revised for clarity as suggested in this comment.

Mr. Kevin Marek

-4-

June 21, 1990

Page 3-17, Section 3.5.1.2, paragraph 3:

The Mature Conservancy vernal pool survey currently underway at Beale AFB is NOT a rare plant survey and should not be indicated as such. So far, there have been no adequate rare plant or animal surveys done at Beale AFB and the vernal pool resources have not been adequately delineated nor have their associated watersheds been identified. Beale AFB staff will need to consult with the U.S. Army Corps of Engineers to acquire the necessary permits for construction activity in wetland and vernal pool areas under the 404 permit process.

Page 3-20, Section 3.5.2.1:

The possible presence of tricolored blackbirds in the freshwater marsh areas of the base should be addressed. A survey should be conducted to determine if they are nesting on base.

Page 3-20, Section 3.5.2.2:

The elderberry trees should be surveyed for valley elderberry longhorn beetle, a Federally-listed threatened species, particularly if any elderberry habitat will be disturbed.

Page 4-13 to 4-14:

It is stated that the construction of many of the new facilities will result in the removal of several vernal pools and intermittent drainages. Avoidance is the preferred alternative. Mitigation for unavoidable impacts must be based on the replacement principle of "equal acreage and value". Wetlands include, but are not limited to marshes, vernal pools, swales, seasonal wetlands and riparian vegetation. Consultation with the U.S. Army Corps of Engineers should be initiated under the 404 permit process.

If the DFG can be of further assistance, please contact Mr. Dan Smith, Associate Wildlife Biologist, or Ms. Patricia Perkins, Wildlife Management Supervisor, Region 2, Department of Fish and Game, 1701 Nimbus Road, Suite A, Rancho Cordova, CA 95670, telephone (916) 355-7010.

[Signature]
Pete Bontadelli
Director

Attachments

Response to Comment 73:

The text of Section 3.5.1.2, paragraph 3 has been modified to clarify this point.

Response to Comment 74:

The realignment action will impact a small portion of Beale AFB. A complete survey of the base to delineate rare plants and animals and vernal pools is not necessary in order to assess the impacts of this action. All necessary investigations have been undertaken or will be completed soon, including consultation with the COE regarding Section 404 permits.

Response to Comment 75:

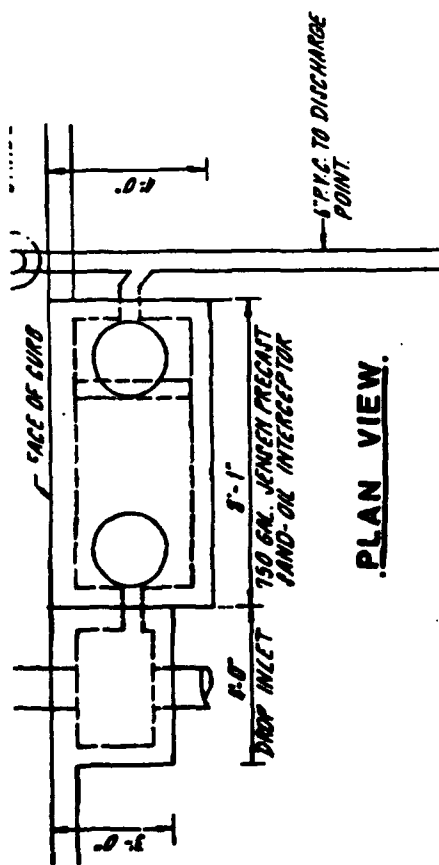
Please refer to Response to Comment 71, where this concern has been previously addressed.

Response to Comment 76:

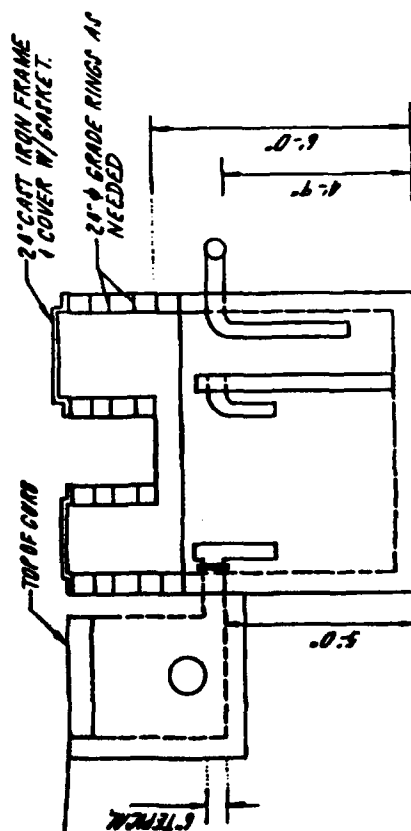
No elderberry habitat is expected to be disturbed by the realignment action, therefore, there is no need to survey for valley elderberry longhorn beetles.

Response to Comment 77:

Please refer to Responses to Comments 8, 9, 13, 15, and 20, where this has been previously addressed.



PLAN VIEW.



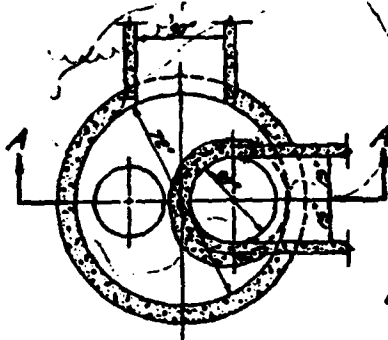
PROFILE.

**JENSEN PRECAST
OIL-SAND INTERCEPTOR**

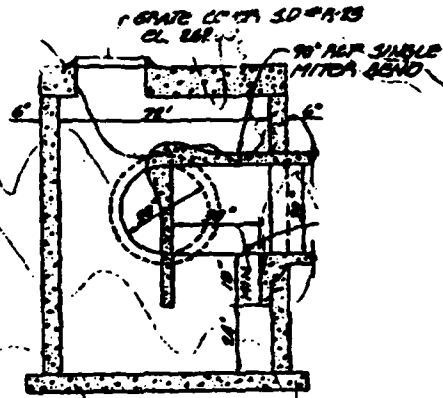
NO SCALE

Example

D-32



MODIFIED S.D. #A-25
MANHOLE W/ FLAT SLAB TOP
& GRATE TYPE COVER
NO SCALE



SECTION "A-A"
NO SCALE

201538 RPT 08.05.1991

COUNTY OF NEVADA

PLANNING DEPARTMENT

Eric Reed Adm. Bldg.
950 Meadow Avenue
P.O. Box 6100
Nevada City, CA 95959-6100
(916) 265-1440

May 22, 1990

Mr. Kevin Harsh
10 SAC/DEVP
Building 500, Room 3022
Offutt AFB
Nebraska 68113-5001

Dear Mr. Harsh:

Thank you for the opportunity to comment on the adequacy of the Draft Environmental Impact Statement for Realignment of Beale Air Force Base, April 1990. The following are this Department's comments:

1. Page 28-2: The statement that long-term air quality impacts will not be significant because this operation is simply being moved to another area of the same air basin seems inadequate. This is a very large air basin stretching from the south of Baberfeld to the north of Beading. Changes in the location of air pollution sources within the air basin can have significant impacts on nearby areas such as Nevada County. In fact, air quality in the foothills and mountains of Nevada County has gone down in recent years, very likely the result of growth and development within the nearby Central Valley.
2. Page 2-21: Will the induced population growth of 4,100 people impact the supply and demand for housing within western Nevada County, particularly the Fern Valley and Lake Wildwood areas? Are there adequate sites for additional housing in such areas? If not, will this project increase the demand for additional housing and induce population growth? The housing market in Nevada County is not discussed on page 3-46. If there is a current waiting list of 200 families wanting on-base housing, this may indicate the increased demand for housing in Nevada County as personnel increases.
3. The figure on page 3-23 shows the existing 10m noise contours, none of which intrude into Nevada County. Based on information contained in the Beale Air Force Base Air Installation Compatible Use Zone Report 1982, it appears the contours are much larger and intrude into Nevada County. It may be appropriate to discuss the differences in these two maps.
4. Page 3-49 discusses existing school facilities within Yuba and Sutter Counties. Because Nevada Joint High School, Pleasant Valley, and Nasty Springs School Districts may also be impacted, they should also be discussed.

D-33

Letter from the County of Nevada Planning Department May 22 1990

Response to Comment 76:

The number of days when the NAAQS and CAAQS for ozone is exceeded is not expected to increase as a result of this action. Emissions of NO_x, SO_x, CO, and PM₁₀ are not expected to create exceedances of NAAQS or CAAQS. The proposed mitigation measure of watering and/or applying chemical dust suppressants to disturbed areas will help control PM₁₀ emissions so that exceedances of NAAQS and CAAQS for PM₁₀ are not expected.

Response to Comment 79:

The current Beale AFB military personnel who reside off base live predominantly in Yuba and Sutter Counties as do the current civilian employees, although some are known to reside in the Fern Valley area of Nevada County. In November 1988, there were 106 Beale AFB military and civilian personnel living in Nevada County, including 84 in Fern Valley and the western part of the county. (Beale AFB 9th CSG/DEEV, November/December 1988). They represent less than 3 percent of all military and civilian personnel associated with Beale AFB at that time. It is expected that new military and civilian personnel will be similarly distributed and also reside predominantly in Yuba and Sutter Counties. Nevada County would be expected to receive fewer than 20 additional households from this group. The U.S. Air Force is currently studying the requirements for housing for permanent party personnel as described in Section 2.2.3.4. If it is determined that such housing is needed, it will be located on or south of the base, probably in or near the town of Wheatland in Yuba County. The waiting list of approximately 200 families wanting on-base housing consists of families currently housed off base who would prefer to be housed on base. They do not represent a backlog of unhoused families pressuring the housing market.

The induced population growth (which will be a result of new residents other than military and civilian base personnel) is expected to result primarily from employment opportunities in construction and related businesses, services, and retail trade. It is unlikely that significant numbers of workers in these types of businesses will find housing affordable to them in western Nevada County. They are expected, rather, to be located predominantly in Yuba and Sutter Counties. The impact of the realignment will be an isolated experience, not an ongoing growth factor for the surrounding communities. Additionally, the impact of the growth in housing demand will be offset by increases in revenues to local governments in the form of taxes and income to local communities in the form of base expenditures that will accrue to the communities where Beale AFB personnel and other new residents live.

Response to Comment 80:

The noise conditions at Beale AFB have improved considerably since 1982 as a result of changes in aircraft type and number and operation number and time of day, which all affect the noise profile at the base, including changes as a result of the recent deactivation of the SR-71 program. The noise contours developed for this analysis cover less land than those presented in the 1982 AICUZ. This reduction in noise levels benefits the communities surrounding the base. A new AICUZ study will be released within 120 days of the ROD for this action.

Response to Comment 81:

All schools that educate dependents of federally employed personnel are eligible to receive Federal Impact Aid Subsidies in proportion to the number of such students enrolled. Therefore, Nevada Joint High School, Pleasant Valley, and Ready Springs School Districts will receive these subsidies if they enroll Beale AFB dependents. The numbers of students from Beale AFB families currently studying in Nevada County schools is relatively small (estimated at fewer than 50 or less than 0.5 percent of students in Nevada County schools). Most Beale AFB students are enrolled in Yuba and Sutter Counties. Similarly, increases in enrollment expected as a result of the realignment will likely be distributed primarily to Yuba and Sutter Counties' schools. If the Air Force determines that additional permanent party housing is required, it is expected to be built on one of three candidate sites. Students living on any of these three sites would attend Wheatland schools in Yuba County.

Response to Comment 82:

The impacts of changes in traffic resulting from the realignment will primarily affect base access points and on-base roads and parking. Traffic increases on off-base roads are expected to be distributed similar to current Beale AFB traffic and not place undue burdens on any off-base roads, including State Highway 20 and Pleasant Valley Road. Therefore, no off-base mitigation measures are required.

Response to Comment 83:

The western portion of Nevada County is within the Economic Impact Region (EIR), which is defined by the USAF as a 50-mile radius around the base. This simply-defined EIR allows the USAF to quantify the impacts of its expenditures on the communities surrounding its bases nationwide in a consistent manner. It is known that economic impacts of actions at bases can never be perfectly evenly distributed within the EIR. The Economic Impact Forecast System used to model the impacts of this action is the most appropriate modeling tool available designed specifically for use in evaluating impacts of military base changes. This model is designed to perform analysis on study units consisting of whole counties, a limitation inherent in the data sources (U.S. Bureau of the Census, U.S. Bureau of Economic Analysis, and U.S. Bureau of Labor Statistics). Inclusion of Nevada County in the modeling effort would have been a significant distortion, since part of the county is not within the EIR; therefore, the modeling effort included only Sutter and Yuba Counties. Please note that although parts of Placer, Butte, Yolo, El Dorado, and Sacramento Counties are within the EIR, they were not included in the modeling. This does not mean that the USAF believes that no impact will be felt in Nevada County. In regards to housing, additional permanent party housing is under consideration as discussed in Section 2.2.3.4 and the Response to Comment 79 above. The Air Force's action does not in any way interfere with commercial and industrial development prospects for Nevada County.

5. Based on the discussion beginning on page 4-18, there does not appear to be a discussion of off-site transportation impacts. The Caltrans District 3 System Management Plan (June 1986) determined that State Highway 20 east of this project has moderate deficiencies as of 1985; by 1995 it is projected deficiencies will be severe. How will this project affect this State highway and other roads in Nevada County, particularly Pleasant Valley Road? How will safety issues and existing and projected levels of service be affected? How many trips will be generated off-site as a result of this project? What mitigation measures can be applied to this project to ensure that traffic impacts are adequately addressed and mitigated?

6. The discussion on page 4-25 does not include the economic impacts to Nevada County. Such a discussion might conclude that the primary impact will be an increase in demand for more housing without the positive fiscal impacts associated with commercial and industrial development, thus concluding that fiscal impacts to Nevada County might be negative. However, without analysis the impacts are unclear.

7. There is no section that discusses the implementation of mitigation measures or the monitoring of such measures to ensure that they will occur. Absent a clear statement of responsibility, timing, and long-term accountability, it is unclear how effective the mitigation measures will be.

8. Beale Air Force Base is only several miles west of Nevada County. The impacts of this project upon Nevada County should be addressed.

Thank you for the opportunity to comment.

Very truly yours,

Thomas A. Perillo, Planning Director

By: Patricia S. Norman, Senior Planner

cc: Bill Schultz
pm

Beale-5.23

Response to Comment 84:

The Air Force, in issuing this document, makes a commitment to implement and follow through on the proposed mitigation measures (Section 4). Additionally, a number of potential mitigation measures are still under study by the Air Force to reduce the impact of this action. The ROD to be issued for this action will contain specific USAF commitments to implement mitigations for the action.

Response to Comment 85:

The impacts of this project on that part of Nevada County within the EIR have been addressed in the FEIS by virtue of inclusion in the EIR and in Responses to Comments 78 through 84, above.



Letter from Yuba-Sutter Chamber of Commerce, May 14, 1990.

May 14, 1990

Mr. Kevin Marek
MO SAC/DEVP
Building 500 - Room 1022
Offutt AFB, Nebraska 68113-5001

Dear Mr. Marek:

I am writing to support the adoption of the draft environmental impact report outlining possible impacts of the transfer of the 323rd Flying Training Wing from Mather Air Force Base in Sacramento to Beale Air Force Base in Yuba County.

The draft EIR notes that while general air traffic will increase from 668 operations per day to nearly 900 operations per day there will be no discernible increase in noise pollution. There appears to be a basic trade-off in the level of noise which will be generated by frequent take-offs and landings of T-43's and T-37's. The noise will be offset by the drawdown of the SR-71 program, which accounted for approximately 95 percent of the noise complaints filed with Beale personnel in 1988.

I believe the Air Force has done everything possible to mitigate the impact of increased operations and few if any additional complaints should be generated by the mission change.

The positive impact on the economy of Yuba, Sutter, Nevada, Placer, and Butte Counties should more than offset the deactivation of the SR-71 program as well as any minor increase in ambient noise levels. The proposed change will have an especially positive impact on Wheatland School District, which will receive approximately 475 additional students.

The Yuba-Sutter Chamber appreciates having had the opportunity to review the draft environmental report. Our members look forward to having Beale AFB as a neighbor for many years to come.

Sincerely,

William R. Smith
William R. Smith
President

WRS/brb

cc: Lee Kirchner, Chairperson Military Affairs Committee
David Breninger, City Manager Grass Valley

D-37

Response to Comment 86:

Comment acknowledged.

86

Response to Comment 87:

Comment acknowledged.

87

NC·BROWN

Kevin Marek
WG SAC/DEV
Building 500, Room 3D22
Offutt AFB, Neb 68113

Our company is planning a development just south of Beale Air Force Base. In fact a portion of the Air Force's flight path runs across our property. So we are very interested if there will be an increase in noise.

I have enclosed a copy of an article that recently appeared in the local paper. It mentions a draft environmental report prepared by the Air Force. I would like to get a copy of that report.

Sincerely,

Amy McKernan

Terry McKernan
Administrative Assistant

Response to Comment 88:

Comment acknowledged.

Letter from Tomm Dunn, May 12, 1990

Tomm Dunn

204 E. 18th St., #80
Marysville, CA 95901

(916) 743-6419

12 May 90

HQ Strategic Air Command
DEVP - Kevin Mark
Building 500 - Room 3D22
Offutt AFB, Nebraska 68113-5001

RE: Transfer of 323rd Flying Training Wing to Beale AFB

Mr. Mark:

I want to preface my comments by telling you that overall I welcome the 323rd to Beale. I will be present at the Wednesday, May 16th public hearing at which time the following questions and recommendations will be put forth:

1) The Air Force estimates that an additional 100-acre site will be needed for housing. According to a report published in the Marysville - Yuba City Appeal-Democrat the Air Force is considering three sites: on base just south of existing housing on Lark Drive and East Garryanna Drive; north of Wheatland at the edge of town and somewhere between the base and Wheatland.

My concerns are environmental and I intend to pursue the issue to the full extent possible.

Locating additional housing at the north edge of the City of Wheatland is the most sensible from an environmental perspective. Locating housing in Wheatland will also provide a needed economic boost to the city and will be a direct benefit to the County of Yuba.

Construction of additional housing anywhere on Beale AFB will have a distinct, definite and documentable negative environmental impact. The area occupied by Beale AFB is a natural terrain habitat for thousands of migratory birds. Any additional loss of land will have a severely negative impact on the nesting and migratory patterns of a number of species of birds.

Quite regardless of where the Air Force locates additional housing it is my opinion that mitigation is an absolute necessity. The degree of mitigation will be substantially greater if the Air Force chooses to construct housing in environmentally sensitive areas. My question is this: What is the Air Force prepared to offer in mitigation for the destruction of environmentally sensitive land?

2) It is estimated that flight activity at Beale will increase from an average of 688 operations per day to 900. What is your estimate of the additional volume of toxic

Response to Comment 89:

The USAF is studying the need for additional permanent party housing. Currently, three sites (approximately 100 acres each) are under consideration. However, as described in Section 2.2.3.4, no final decision has been made on this whether or not to build additional housing. The impacts of that action will be addressed in a separate NEPA document. The USAF will consider both negative and positive environmental and economic impacts from this potential action and any necessary mitigation measures in that document.

89

Response to Comment 90:

Estimates of additional air emissions are presented in Tables 4-1 through 4-5. Mitigation for air quality impacts are given in Section 4.3.2.

90

pollutants that will be added to the atmosphere in and around the Beale AFB area? What mitigation is the Air Force prepared to offer the people of Yuba County relative to this increased pollution?

3) It has been reasonably determined that the SR-71 pilots were among the most professional and best trained in the Air Force. To this point Beale AFB pilots can be generally characterized as being fully-trained professional pilots and navigators.

According to the Appasi-Democrat, the 323rd is an undergraduate training wing. It seems reasonable to assume that the probability factor for an aircraft crash is significantly increased as result of this change. I would assume that the Air Force would not deny this factor, but would address the issue in a positive and straight-forward manner. What, then, is the Air Force committed to do to mitigate this factor? Will the Air Force be assigning additional fire, rescue and emergency medical treatment units to Beale? What additional supplies, personnel and programs are being established to cope with a potential civilian-involved crash?

I look forward to receipt of your answers at your first opportunity. Doing so will enable us to address these issues publicly in a timely manner.

Sincerely,



Tom Dunn

Td/sk
cc: file

90

Response to Comment 91:

The USAF is committed to air safety for the protection of its personnel and people in the communities surrounding its bases. Air Force efforts to ensure air safety include those discussed in Section 3.8.1. The potential for accidents outside the CZ and APZ I and II is very slight. The USAF is always ready to work with communities surrounding bases, including Yuba and Sutter Counties, to reduce the potential for aircraft mishaps as much as possible, and prepare for emergency response actions in the event of a crash. As a result of the realignment action, no additional fire, rescue, and emergency medical treatment units will be assigned, nor will there be any changes in the emergency disaster coordination facilities, supplies, personnel, or programs.

91

Memorandum for the Hearing

Transfer of the
323rd Flying Training Wing
to Retle AFB

Comments of Vincent T. "Tom" Gunn

As a native of Yuba County, a member of the American Legion Post 42, and as a private citizen, I whole-heartedly welcome the 323rd to Beale. This welcome, however, is not unconditional and I believe it is absolutely mandatory that the Air Force address two specific concerns I have. They are:

1) It will be generally agreed upon that U.S. Air Force Reconnaissance wing pilots and navigators are quite probably the most highly-trained and capable in the world. Until this time the people of Yuba and Sutter County and have been very fortunate to have both state-of-the-art aircraft and top-notch crews flying overhead.

The 323rd, however, is a specialized undergraduate navigation training wing. At least one member of every flight crew will be a student.

This factor must then be quantified by the number of increased daily flights projected for the 323rd. I have been told that daily flight activity at Beale will increase from about 650 flights-per-day to approximately 900 flights-per-day.

I believe it is reasonable to conclude that the risk factor for flight failure and crash will be substantially increased.

Therefore, it is my opinion that the Air Force should order parallel increases of emergency response personnel and equipment. Further, I believe the proper and responsible act on the part of the Air Force would be to submit a mitigation statement to the Office of Emergency Services in Yuba County detailing specific services and support that would be made available to the County in the event of an aircraft crash.

If the training flight patterns will cross over into Sutter County, and I assume they will, then a similar mitigation statement should be provided to Sutter County officials. The cities involved; Marysville, Yuba City, Wheatland and Live Oak, should also be given such statements.

These mitigation statements should be clear, detailed and definitive statements from the Department of the Air Force spelling-out in clear and concrete language exactly what measures the Air Force would take, what services it would provide, what equipment and manpower it would provide, in the event of an aircraft crash. Further, these documents should be made available for public review prior to 323rd start-up operations.

Written comments from Vincent T. (Tom) Dunn, May 16, 1990, Public Hearing.

Response to Comment 92:

Please refer to Response to Comment 91, above.

2) I have also been told the Air Force has narrowed its search for a 100-acre housing site to three parcels: two on-base sites and north of the City of Wheatland.

If the Air Force passed a major investment of dollars into the available land at the northern edge of the City of Wheatland it would create a wave action of private investment in the City of Wheatland. It would greatly enhance growth in the city and would enable the city to improve the extent of its essential services.

An Air Force stimulated economic boom in Wheatland will strengthen the economy of Yuba County's southern boundary. This is an extremely important consideration. At present there is a corridor for future development extending along Highway 65 from Roseville, which is heavily developed at the southern end, to the Olivehurst-Linda area which is developed at the northern end of the corridor.

Smaller towns under consideration as development anchors include Lincoln, in Placer County, and Wheatland, in Yuba County. A strong surge of development in Wheatland will greatly enhance the prospects for Yuba County to be selected for extensive future industrial and economic development.

I believe it is the responsibility of the Department of the Air Force to develop these 100 acres of new housing in an area where the construction will have maximum positive impact on the host county. If that is valid criteria, and I am convinced that it should be year primary consideration, then Wheatland is the place you want to be.

I ask you to consider, respond to, and act upon these two essential issues. In closing I want to take one more opportunity afforded to me to welcome the 323rd to Beale and to Yuba County. We're very glad that you're coming.


Vincent T. "Tom" Dunn

Telephone: (916) 743-6419
204 E 18 ST - 80
MARYSVILLE CA 95901

Response to Comment 93:

Please refer to Response to Comment 89, above.

Ken Hatchett
P.O. Box 1492
Marysville, CA 95901
Phone: 743-0912

Members of the Panel:

I am a retired Air Force Master Sergeant, a past member of the City of Marysville Personnel Board, a past Governing Body member of a federally-created health planning authority with a nine-county jurisdiction, and a member of the local chapter of the Sierra Club. While I support the transfer of the 323rd Flying Training Wing to Beale Air Force Base, I would like to see a more detailed environmental impact report from the Air Force.

If daily flights are increased from 666 to 900, then what is the additional total volume of air pollutants that will be released into the air above Yuba County in the course of an average flight day? Will flights be reduced on days when we experience weather inversions when pollution is not blown away? Will the amount of jet fuel being brought into Beale and stored at Beale be increased, and if so, by how much?

I also have concerns about the 100 acres the Air Force wants to develop. All the land on which Beale Air Force Base sits is natural habitat land for a large population of California bird species. If you reduce their feeding and nesting area by 100 acres, then what specific, real and positive actions are you going to take to mitigate for that loss? The loss of land to wildlife will be permanent, so any mitigation you propose must also be on-going and permanent. What do you propose to offer in mitigation?

I also want to know what your specific plans are to handle liquid and solid waste disposal and control.

I realize that you cannot provide specific answers until you have selected a final building site. But when a final site is selected, will you provide the public with a detailed environmental impact report for that chosen site?

If the Air Force treats these environmental concerns seriously then the level of harmony and friendship between SAC and the people of this community will continue to be positive.

Ken Hatchett
Ken Hatchett

Response to Comment 94:

Please refer to Response to Comment 90, above. The USAF does not foresee a need to curtail flight activity because, as discussed in Section 4.3, aircraft emissions are not expected to create exceedances of NAAQS or CAAQS. The amount of fuel delivered to Beale AFB is expected to increase. SUNT operations at Mather AFB currently use 7.7 million gallons of aviation fuel (JP-4) per year. It is expected that fuel delivery to Beale AFB will increase by this amount. Existing fuel storage facilities at Beale AFB will be used.

Response to Comment 95:

Please refer to Response to Comment 89, above.

Response to Comment 96:

The USAF's plan to handle liquid and solid waste disposal and control is described in Section 4.11.

Response to Comment 97:

Please refer to Response to Comment 89, above.

PUBLIC HEARING
DRAFT ENVIRONMENTAL IMPACT STATEMENT
BEALE AFB REALIGNMENT

[The hearing was called to order by Colonel McShane at 1900, 16 May 1990, at the Yuba-Sutter Chamber of Commerce Building, Marysville, California.]

WELCOME AND OPENING BY COLONEL MCSHANE

Ladies and gentlemen, I am Colonel Mike McShane. I am a full time military trial judge for Air Force Courts-Martial. I have been designated by the office of The Judge Advocate General in Washington as presiding officer for tonight's public hearing upon the draft environmental impact statement.

I want to start out by advising you that the National Environmental Policy Act and implementing regulations require federal agencies to carefully analyze the potential environmental impacts of proposed actions and to use those analyses in arriving at decisions or recommendations on how to proceed with those actions.

The Air Force has prepared and distributed, in accordance with applicable regulations, a draft environmental impact statement addressing a proposal to realign Beale Air Force Base by moving the specialized undergraduate navigation training mission from Mather Air Force Base to Beale Air Force Base.

Now I'm not here as an expert on this proposal and I've not had any connection with its development. I'm not here to act as a legal advisor to the experts who will address this proposal. My purpose is simply to ensure that we have a fair, orderly hearing and that all who wish to be heard have a fair chance to speak.

Let me just take a moment to explain how tonight's hearing will proceed. This isn't going to be a debate or referendum or vote upon the action itself. There will be no demonstrations nor should you signify your agreement or disagreement with a speaker's position by applause or other expressions of approval or disapproval. That adds nothing to the hearing and simply wastes your valuable time; what may, in fact, be the only time that you have to comment on this proposal.

What this informal hearing is intended to provide is a public forum for two-way communications with a view to improvement of the overall decision making process by our government. You

notice I said "two-way communications." Part One calls for you to listen carefully to what these experts have to say as you are briefed on the action and its anticipated environmental consequences. After the briefing you'll be able to ask questions to clarify any points made in the briefing or in the draft environmental impact statement itself.

The second part of the hearing is for you to tell the experts what you think, to give Air Force decision makers the benefit of your knowledge of this area as it's affected by this action, and any environmental hazards that you perceive.

Our hearing isn't for the purpose of justifying anything, but rather to identify and assess pertinent impacts, including your personal perspective as to those impacts.

You should have received a comment sheet when you came in and on that you can indicate whether you want to make a statement tonight. A little later on the Public Affairs folks will bring those to me and I will recognize members of the public for the purpose of making statements about the proposal. Don't be shy or hesitant about making a statement tonight. This is an informal hearing and I want to help ensure that all who wish to speak have a fair chance to be heard.

I do have a couple of ground rules that I need to have folks follow tonight. Please speak only after I recognize you and please address your remarks to me.

Second, speak clearly and slowly, starting out with your full name, address, and the capacity in which you appear; that is, as a public official or a designated representative of a private association or as a person speaking solely in his or her own individual capacity so that our court reporter, Vivian Kirkpatrick, who has to make a verbatim record of these proceedings, can do her job professionally.

Third, if you have questions for the panel please ask them one at a time. I will allow a reasonable number of questions.

Fourth, while we do not have a set time limit on anybody's right to comment here tonight, please be considerate of other's rights to speak and avoid repetition.

Fifth, honor any request from me that you cease speaking.

Sixth, do not speak while another person is speaking. Only one person will be recognized at a time and, if more than one person talks at one time Vivian just can't get it all down; it's impossible.

And, finally, there will be no smoking during this hearing and I'm sure the owners of the building here would appreciate your abiding by that rule and so would I.

Now it's possible that there will be questions tonight that the briefers are unable to answer. Even though there is a good deal of expertise here, the briefers will not attempt to answer questions unless they are confident they can do so accurately, and the second reason is that there may be questions that have national security implications. These must be reviewed further before answers are provided. If this happened and if the question is relevant, I can assure you that it will be addressed in the final environmental impact statement and you can, of course, request a copy of that document.

If you don't want to speak tonight but there are matters that you want entered into the record, you are invited to fill out a comment sheet. You should have gotten one of these when you walked in. Comments can be submitted at any time prior to the 12th of June 1990 by mailing them to the address which is listed at the bottom of that form. You can, of course, provide written comments on the form tonight if you don't want to speak but you do have comments that you want to give us tonight. Regardless of whether you enter your statement on the record tonight or mail it in later, it will be carefully considered and made part of the record of these proceedings. It will have equal weight and receive the same careful consideration whether it's made during tonight's hearing or afterward.

I'd like to take this opportunity to thank everyone who turned out tonight. Your presence here is commendable in that it reflects a great interest in your community and in those things that are important to it. Let me assure you that your interest is the primary purpose for us being here.

I'd like to go ahead and take care of some introductions at this time. First, we do have a couple of folks from the base. Many of you may know them. For those who don't, we have Brigadier General Mitchell from the 14th Air Division - Commander of the 14th Air Division out at Beale, and we have Colonel Jacks, the Base Commander out at Beale.

Now I'd like to introduce the panel that we have assembled here tonight, starting out with Major Jack Wilder. He's from the Basing and Units Branch at Headquarters SAC and he will give an overview of the proposed action tonight.

Next we have Mr. Kevin Marek from the Environmental Management Branch, also at Headquarters SAC, and he'll brief you a bit about the environmental process itself.

The next gentleman on the panel is Mr. Tim Ensminger from the Oakridge National Laboratories, and then Mr. Gary Hayward from Dames and Moore. We also had a hand in preparation of the report.

At this time I'd like to call on Major Wilder to provide his briefing.

MAJOR JACK WILDER

Thank you, Colonel McShane. As Colonel McShane said, I'm Major Jack Wilder and I am from Headquarters SAC, Bases and Units Division, and we are responsible for putting together a description of the action that is under consideration in this environmental process.

This action is the result of the Secretary of Defense's Commission on Base Closure and Realignment and at Beale we can expect to see approximately 36 aircraft and over 1600 civilian and military personnel who would move into the Beale area as part of the 323rd Flying Training Wing and the realignment of Undergraduate Navigator Training.

On a typical flying day at Beale after UNT moves, the aircraft you see displayed here (referring to a slide) will fly approximately 44 sorties. The T-37 will fly approximately 33 sorties a day and the T-43s about 11 sorties a day.

In addition to the aircraft and personnel that move into Beale, there will also be military construction required. The first year of that construction is basically programmed in Fiscal Year 91 and, as you can see (referring to a slide), aligned here are the projects that would be built as part of that year's worth of construction, and they mainly make up the academic complex that was located in the main cantonment area of the base.

Fiscal year 92 projects are made up of the maintenance complex and a small scattering of base operating support structures that will be spread around the base depending on where that facility is currently located. In addition to new construction, certain facilities will be modified and renovated to bring them up to a good enough size to absorb the population that is moving into Beale.

The last year of MILCOM - military construction - is in FY 93, and that is the remainder of the base operating support facilities that will be built at Beale to handle this inflow of personnel.

This construction is designed to allow the first student to begin his navigator training - his or her navigator training - at Beale in January of 93 and will allow the total undergraduate navigator program to move up to Beale by October of 93.

Thank you. And now Mr. Kevin Marek will speak on the environmental process.

MR. KEVIN MAREK

Good evening. My name is Kevin Marek. My office is responsible for managing the environmental issues at Strategic Air Command. One of our responsibilities is conducting environmental analysis for Beale realignment. Major Air Force actions require analysis for environmental impacts by public law and regulation.

This is the slide indicating where any comments can be sent. Go to the next one. The laws that require the regulations are by public law, which is NEPA, the abbreviation for it, and Air Force regulations. This hearing is being conducted on Beale Air Force Base draft environmental assessment. A lot of times you'll hear me say "EIS", which is just the acronym for "environmental impact statement," and this would be for the realignment of Beale, and your comments are being sought at this time for this hearing. The United States Air Force preparation of the draft EIS is completed for the decision-making process regarding the realignment.

What we are doing here tonight is part of base closure and realignment. This decision for base closure and realignment came out of the Commission, which made a decision on December 29th, 1988, on which bases to close and where realignments would occur. The Secretary of Defense adopted that Commission's report on January 8th, 1989, so the Commission's recommendations were accepted. The only exceptions to the EIS process were the looking at the review by the Commission and the acceptance by the Secretary of Defense. This means that the decision to realign Beale Air Force Base has already occurred.

The scope of looking at EIS other alternative bases to Beale is not being considered because the decision has been made that Mather force structures will be going to Beale. The purpose of this EIS is to help the Air Force intelligently review the changes in operations at Beale and to analyze environmental effects caused by the realignment and measures necessary to implement the realignment. Appropriate mitigation measures are developed within the document as required. The Air Force hopes to have the EIS and associated realignment completed - for the document to be completed by 31 August 90. This date would meet the base closure and realignment action requirement for implementation and for force structures to change from Mather Air Force Base no later than 30 September 1995.

Implementing the realignment involves moving the active aircraft units from Mather to Beale. Environmental impacts for Mather Air Force Base caused by the departure of those units are

addressed in a separate EIS document for Mather. A previously programmed force structure change for the relocation of the SR-71s at Beale were assessed in another NEPA document.

The above information indicated on the chapters - Slide number 4, please - is found in the document. These are the chapters that are in the environmental impact statement describing what the proposal was, what caused that proposal to be implemented. The base closure commission is described in Chapters 1 and 2. The realignment draft EIS presented in Chapter 3 presents the baseline information for Beale Air Force Base. Chapter 4 in the document assesses impact of the move and the realignment actions. Now if you'd go to the next slide?

Today we are here to conduct the hearing for your input and the details of the document, the different areas which are looked at in the document - noise, archaeological, historical - any of the concerns are within that Chapter 4 in looking at the mitigation. If you'd go to the next slide. These are the areas which we are looking at in the document.

Now I'd like to discuss the actual aspects of the document, which are what is being covered in the different chapters. We've hired a contractor, Oakridge National Lab, along with Dames and Moore, to help prepare the document. We have collected the statistics, the maps, information, to go into the report, and this is what has been mailed out. If you have not gotten a copy of the report, you can either write us for a copy or, I believe still, Public Affairs has some of the copies of the report. We have analyzed all the economic - not economic, excuse me - environmental consequences, what happens with the action of moving the units to Beale.

The final environmental impact statement - I'd like to go to the slide now, the next one - the time lines we have. We have published in the Federal Register the listing. We are going for public hearing and comment - this is where we're at. These are some of the time lines. We've had a scoping meeting here. It's been given to EPA, published in the Federal Register; we're at the point now where we have the public hearing and for the close of comments on the 12th. So any comments that are presented here tonight or in written form will be included in the document. You'll have responses to them. If they are significant enough to require an amendment to the document, the document will be amended.

After the final environmental impact statement is filed with the Environmental Protection Agency and published in the Federal Register, the Air Force will prepare what's called a Record of Decision upon completing and filing the document. The action the Air Force takes is based on this Record of Decision.

This has been a brief explanation of the process; the dates we have gone through, the events we have completed to this date. I will now turn it back to Colonel McShane to start your comment period.

COLONEL MICHAEL MCSHANE

Thank you. I noticed a few folks came in after I started the meeting, so I'll go over a few other things. First off, though, I'd like to ask, are there any questions either for Major Wilder or Mr. Marek or the other two gentlemen about the presentation tonight or the draft environmental impact statement itself? Any questions pertaining to those documents or the briefings that they might answer? I'll ask for comments in a few more minutes, but right now I'm looking for questions about the documents or the briefing. --- I don't see any. Okay, good.

You were invited to fill out a comment sheet when you arrived. If you have not filled that out indicating whether you want to comment or not, this would be a real good time to do it. Could I have our guy who is waiting at the door there bring forward any folks that wanted to comment? [The comment sheets were brought forward and presented to Colonel McShane.] I've got Kenneth O. Hatchett, wanted to speak. I think the room is small enough that you can probably speak from there.

KENNETH O. HATCHETT

Good afternoon, ladies and gentlemen. My name is Ken Hatchett, mailing address Post Office Box 1492, Marysville, California. Members of the panel, I am a retired Air Force Master Sergeant, a past member of the City of Marysville Personnel Board, a past member of the nine-county health system, and a member of the local chapter of the Sierra Club. While I support the transfer of the 33rd Flying Training Wing to Beale, I would like to see a more detailed environmental impact report from the Air Force.

If daily flights are increased from 668 to 900, then what is the additional total volume of air pollution that will be released into the air above Yuba County in the course of an average flight day? Will flights be reduced on days when we experience weather inversions when pollution is not blown away? Will the amount of jet fuel being brought into Beale and stored at Beale increase and, if so, how much?

I also have concerns about the 100 acres the Air Force wants to develop. All the land on Beale Air Force Base is a natural habitat for a large population of California bird species. If you reduce their feeding and nesting area by 100 acres, then what specific real and positive actions are you going to take to

Verbal Comments given at Public Hearing May 16, 1990.

The written comments of Kenneth O. Hatchett were read into the record at the public hearing. Please refer to Comments 94 through 97, above.

mitigate for that loss? The loss of land to wildlife will be permanent, so any mitigation you propose must also be ongoing and permanent. What do you propose to offer in mitigation?

I also want to know what your specific plans are to handle liquid and solid waste disposal and control.

I realize that you cannot provide specific answers until you have selected a final building site, but when a final building site is selected will you provide the public with a detailed environmental impact report for that chosen site?

If the Air Force treats these environmental concerns seriously, then the level of harmony and friendship between SAC and the people of this community will continue to be positive.

Thank you.

COLONEL MCSHANE: Thank you, sir. I take it your questions were really ones that you wanted addressed in the final statement rather than trying to get an answer from the panel tonight.

MR. HATCHETT: Yes. I would like it after they get all their plans together.

COLONEL MCSHANE: Thank you. Next, Tom Dunn.

MR. HAYWARD: (to Mr. Hatchett) Would you please submit that in a letter format to the address on the form that was handed you when you came in the door?

MR. HATCHETT: I have a copy of it and I'll give it to the panel. (A copy of his statement was given to the panel.)

COLONEL MCSHANE: That's great. That's one of the things I often say. If you're reading from a prepared presentation and you have an extra copy, we'd appreciate it if you could drop it off tonight. The same goes for anybody else.

All right - Tom Dunn.

TOM DUNN

Thank you, sir. As a native of Yuba County and a member of the American Legion Post 42, and as a private citizen, I wholeheartedly welcome the 323rd to Beale. This welcome, however, is not unconditional and I believe it is absolutely mandatory that the Air Force address two specific concerns that I have. They are:

The written comments of Vincent T. "Tom" Dunn were read into the record at the public hearing. Please refer to Comments 92 and 93, above.

First: It will be generally agreed upon, I think, that the U.S. Air Force reconnaissance wing pilots and navigators are quite probably the most highly trained and capable in the world. Until this time the people of Yuba and Sutter county have been very fortunate to have both state of the art aircraft and top-notch crews flying overhead. The 323rd, however, is a specialized undergraduate navigation training wing. At least one member of every flight crew is likely to be a student.

This factor must then be quantified by the number of increased daily flights projected for the 323rd and for Beale. Now I've been told that the daily flight activity at Beale will increase from about 650 flights or so per day to approximately 900 flights. I believe it's reasonable to conclude that the risk factor for flight failure and crash will be substantially increased.

Therefore, it's my opinion that the Air Force should order parallel increases of emergency response personnel and equipment, and this may be done in the document that will be prepared, I don't know. Further, I believe the proper and responsible act on the part of the Air Force would be to submit a mitigation statement to the Office of Emergency Services in Yuba County detailing specific services and support that would be made available to the County in event of an aircraft crash.

If the training flight patterns will cross over into Sutter County, and I assume they will, then a similar mitigation statement should be provided the Sutter County officials. The cities involved, Marysville, Yuba City, Wheatland and Live Oak, should also be given such statements.

These mitigation statements should be clear, detailed and definitive statements from the Department of the Air Force spelling out in clear and concrete language exactly what measures the Air Force would take, what services it would provide, what equipment and manpower it would provide, in the event of an aircraft crash. Further, these documents should be made available for public review prior to the 323rd start-up operations.

My second concern is this - I've also been told the Air Force has narrowed its search for a 100 acre housing site to three parcels, two on base sites and north of the city of Wheatland. If the Air Force pumped a major investment of dollars into the available land at the northern edge of the city of Wheatland, it would create a wave action of private investment in the city of Wheatland. It would greatly enhance growth in the City and would enable the City to improve the extent of its essential services.

An Air Force stimulated economic boom in Wheatland will strengthen the economy of Yuba County's southern boundaries, and this is an extremely important consideration. At present there is

a corridor for future development extending along Highway 65 from Roseville, which is heavily developed in the southern end of the corridor, to the Olivehurst-Linda area, which is developed at the northern end of the corridor.

Smaller towns under consideration as development anchors include Lincoln, in Placer County, and Wheatland, in Yuba County. A strong surge of development in Wheatland will greatly enhance the prospects for Yuba County to be selected for extensive future industrial and economic development. As many of the other possible on-base sites for the housing are environmentally sensitive and valuable land, I think that this proposal is the most sound.

I believe it is the responsibility of the Department of the Air Force to develop those 100 acres of new houses in an area where the construction will have maximum positive impact on the whole county. If that is valid criteria, and I'm convinced that it should be your primary consideration, then Wheatland is the place you want to be. I ask that you consider, respond to, and act upon these two essential issues.

In closing I want to take one more opportunity afforded to me to welcome the 323rd to Beale and to Yuba County. We're very glad you're coming.

Thank you, sir.

COLONEL McSHANE: Thank you, sir. Now I only had two folks who indicated they wanted to speak, but we have plenty of time. Anybody else desiring to speak, this is your opportunity. Anybody have anything to say at all? (Negative response.)

I would remind you that you do have until the 12th of June 1990 to submit written materials to be included in the transcript of this hearing, and those written statements will be fully considered and addressed in the final environmental impact statement. Once again, oral and written statements or comments will be afforded equal weight.

One last opportunity. Here's - we have a question.

MR. BELZA: I missed the very first part of the discussion. What type of time line are you working on in numbers of people coming to the area?

COLONEL McSHANE: Gentlemen, if you could repeat that?

MAJOR WILDER: The construction will occur during the whole period of probably the end of 90 through 93 and beyond, as the

project's finished. The first student is scheduled to begin their training at Beale in January of 1993 with the whole of UNT located at Beale by the end of September of 93. And that's to meet the projected closure date of Nather.

MR. BELZA: Nothing this fall? I've heard rumors that people were moving in this fall to Beale.

MAJOR WILDER: Not associated with UNT, no, sir.

MR. BELZA: Okay.

COLONEL MCSHANE: Sir, just for completeness of our record, could I have your name, please?

MR. BELZA: Tib Belza.

COLONEL MCSHANE: And could you spell that?

MR. BELZA: T-i-b; the last one is B-e-l-z-a.

COLONEL MCSHANE: Thank you. Any other questions? (Negative response.) Apparently not.

Officials of the Air Force appreciate your efforts to come out tonight and to contribute your views to this public hearing. We thank you for your courteous attention. Please be assured that the Air Force decision-makers will carefully consider each viewpoint raised here tonight when deciding on the ultimate course of action.

Thank you. This public hearing is adjourned.

(The hearing adjourned at 1929, 16 May 1990.)